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Director



(Segment No. 05-12-GW)
Water Body No. WA-12-1115 GW

STATE OF WASHINGTON

DEPARTMENT OF ECOLOGY

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October 8, 1991

TO: Bruce Cochran
Toxics Cleanup Program

FROM: Pam Marti *Pm*
Toxics, Compliance, and Ground Water Investigation Section

SUBJECT: Lakewood/Plaza Cleaners Long-term Monitoring Round II

SUMMARY

The Toxics, Compliance, and Ground Water Investigations Section collected samples from monitoring wells located near the Lakewood/Plaza Cleaners Site on May 15-16, 1991 (Figure 1). This sampling is part of routine ground water monitoring conducted in compliance with the Record of Decision (ROD). Observed concentrations for PERC, TCE and 1,2-DCE are consistent with previous sample results. Samples collected for water quality analysis met all applicable state and federal drinking water criteria.

OBJECTIVES

The Toxics Cleanup Program (TCP) requested that the Toxics, Compliance, and Ground Water Investigations Section conduct long-term monitoring of the ground water at the Lakewood/Plaza Cleaners Site on a semi-annual basis. Monitoring objectives are as follows:

1. Collect ground water quality data that can be used to evaluate the effectiveness of continued operation of wells H1 and H2 to contain and remove contaminated ground water from the aquifer.
2. Monitor the uncaptured portion of the plume.
3. Monitor ground water upgradient of the site to determine if contaminants are migrating toward H1 and H2 from McChord Air Force Base (MCAFAB).
4. Collect samples for additional water quality analysis during the first year of monitoring to characterize the general ground water quality of the study area.

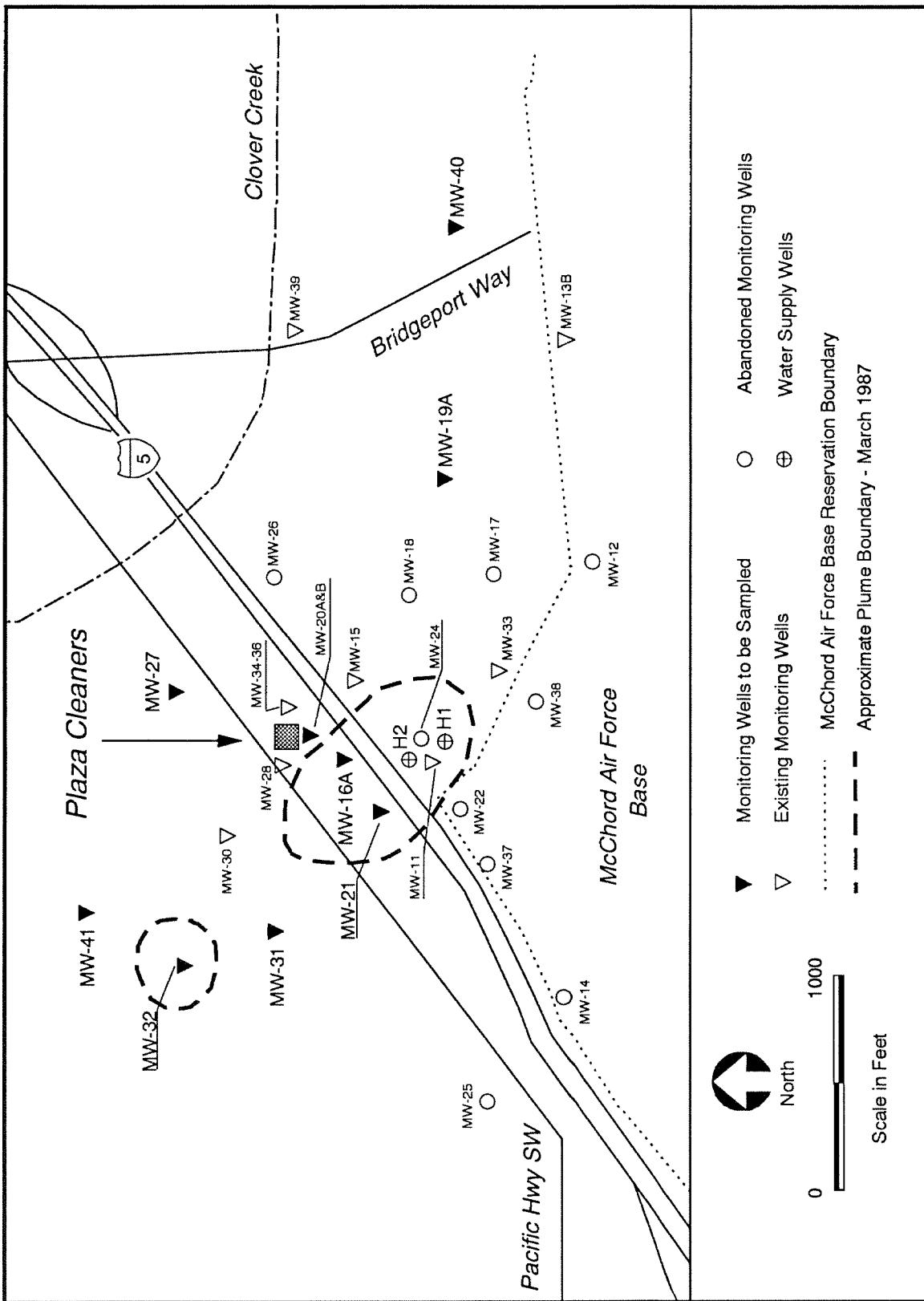


Figure 1: Well Location Map - Lakewood/Plaza Cleaners

SITE BACKGROUND

In 1981, tetrachloroethylene (PERC), trichloroethylene (TCE), and 1,2-dichloroethylene (1,2-DCE) were detected in two Lakewood Water District supply wells (wells H1 and H2), as shown on Figure 1. On-site disposal of waste solvents and sludges at Plaza Cleaners, located 800 feet north of the wells, was identified as the source of the contamination. Site remediation consisted of removal of contaminated sludge and soils, soil-vapor extraction and installation of two air-stripping towers for wells H1 and H2. Soil-vapor extraction was performed intermittently between March 1988 and April 1989. During operation, several hundred pounds of PERC was removed from the glacial till that overlies the main aquifer in the area.

Results from on-site monitoring wells between 1985 to the present show that the pump and treat system has contained and reduced the level of ground water contamination (CH2M Hill, 1990). A portion of the contaminated plume located northwest of the site is not being captured by remedial pumping. However, contaminant concentrations in the uncaptured plume are decreasing; possibly due to biodegradation, dispersion and/or dilution.

Upgradient monitoring wells were installed to detect possible contaminant migration from the adjacent McChord Air Force Base (MCAFAB). Previous studies (EPA, 1985) indicated potential contamination sources from MCAFAB are located within the long-term capture zone of wells H1 and H2. Possible contaminants from McChord AFB include hydrocarbons, pesticides, and heavy metals.

Geology of the study area was defined in the Final Draft Remedial Investigation Report for Ponder's Corner, Washington (1985) as consisting of four geologic units which are listed in descending order; the Steilacoom Gravel, Vashon Till, Advance Outwash, and the Colvos Sands. The main units of interest are the Vashon Till and the Advance Outwash. The Steilacoom Gravel is found throughout most of the study area and ranges in thickness from 1 to 58 feet. This unit often contains perched water which flows to the northwest near wells H1 and H2, but to the south and southeast near the south end of Plaza Cleaners. The Vashon Till underlies the Steilacoom Gravel and ranges in thickness from 8 to 92 feet. Over most of the site the till mixture forms an aquitard of unsaturated and saturated sediments separating the Steilacoom Gravel, above, from the Advance Outwash, below. The Advance Outwash is the primary aquifer for the area. The predominant horizontal flow in the Advance Outwash is west-northwest when production wells H1 and H2 are not in use. When in use, the wells create a large cone of depression. Previous studies showed that drawdowns occur in shallow monitoring wells drilled in the Steilacoom gravel when H1 and H2 are pumping (EPA, 1985). This indicates possible hydraulic interconnection between the Steilacoom gravel and the Advanced Outwash. The Advance Outwash overlies the Colvos Sand.

METHODS

Ground Water Sampling

Figure 2 shows the locations of the sampled wells. Prior to sample collection, static water level measurements were obtained from all wells using an electronic water level indicator which was rinsed with deionized water after use at each location. All monitoring wells were purged until a minimum of three well volumes had been removed and pH, temperature, and conductivity readings stabilized. Purge water was discharged to storm drains or to the ground near each monitoring well. All wells but one were purged and sampled using dedicated bladder pumps. Well MW-20B is not equipped with a dedicated pump and was purged and sampled with a decontaminated teflon bailer. Table 1 lists field observation data including well depth, geologic unit, static water level, pH, specific conductance, temperature, and purged volume in order the wells were sampled.

Wells were sampled from the least to most contaminated. Samples collected for volatile organics were free of headspace and preserved with two drops of 1:1 hydrochloric acid. Samples for dissolved metals analysis were filtered in the field through a 0.45 μm polycarbonate membrane in-line filter and preserved with 1 mL of nitric acid to a pH<2. Chemical analyses, analytical methods, and detection limits are shown in Table 2.

Prior to sample collection, field equipment (i.e., bailers) were precleaned with sequential washes of a Liquinox® wash, hot tap water rinse, 10 percent nitric acid, distilled/deionized water, and pesticide-grade acetone, then air-dried and wrapped in aluminum until being used in the field. Chain-of-custody procedures were followed in accordance with Manchester Laboratory protocol (Huntamer, 1986).

Quality Assurance Samples

In addition to laboratory calibration standards and method blanks, field quality assurance samples consisted of a blind duplicate, replicate, transfer blank, filtration blank, transport blank, matrix spikes, and matrix spike duplicates.

Blind duplicate samples, labeled MW-16B, were collected for all parameters from well MW-16A. Duplicate samples are two sets of samples collected from a well at the same time and submitted to the laboratory blind. A replicate sample was collected from well MW-20A and tested for volatile organics. Replicate samples are two sets of samples collected from a well at different times during the sample investigation. A transfer blank and filter blank were collected and tested for volatile organics only. A transfer blank was collected by pouring organic-free water through a decontaminated bailer. A filter blank was obtained by pumping organic-free water through a peristaltic pump and an in-line filter. A transport blank for volatile organics was carried throughout the sample investigation.

Table 1: Field Parameter Results for May 15–16, 1991

| Monitoring Well | TD From Top of PVC Casing As Measured | Geologic Unit Screened | Depth to Water | pH (st. units) | Specific Conductance (umhos/cm) | Temperature (C) | Purge Volume (gallons) |
|-----------------|---------------------------------------|------------------------|----------------|----------------|---------------------------------|-----------------|------------------------|
| MW-19A | 97.5 | Advance Outwash | 34.51 | 7.27 | 143 | 11.7 | 39 |
| MW-41 | 96.8 | Advance Outwash | 27.26 | 7.53 | 155 | 11.9 | 35 |
| MW-27 | 96.4 | Advance Outwash | 49.80+ | 7.08 | 152 | 13.0 | 21 |
| MW-20A | 97.3 | Advance Outwash | 29.93 | 9.75 | 192 | 14.5 | 34 |
| MW-32 | 114.4 | Advance Outwash | 58.66 | 7.04 | 152 | 11.8 | 28 |
| MW-31 | 91.5 | Advance Outwash | 29.5+ | 7.12 | 142 | 12.1 | 31 |
| MW-21 | 92.1 | Advance Outwash | 38.01 | 7.36 | 160 | 12.9 | 27 |
| MW-16A | 109 | Advance Outwash | 39.48 | 7.58 | 188 | 13.7 | 135 |
| MW-20B | 50.4 | Vashon Till | 30.57 | 7.49 | 412 | 14.6 | 10 |

TD = Total Depth

+ = Probe hit obstruction above water level.

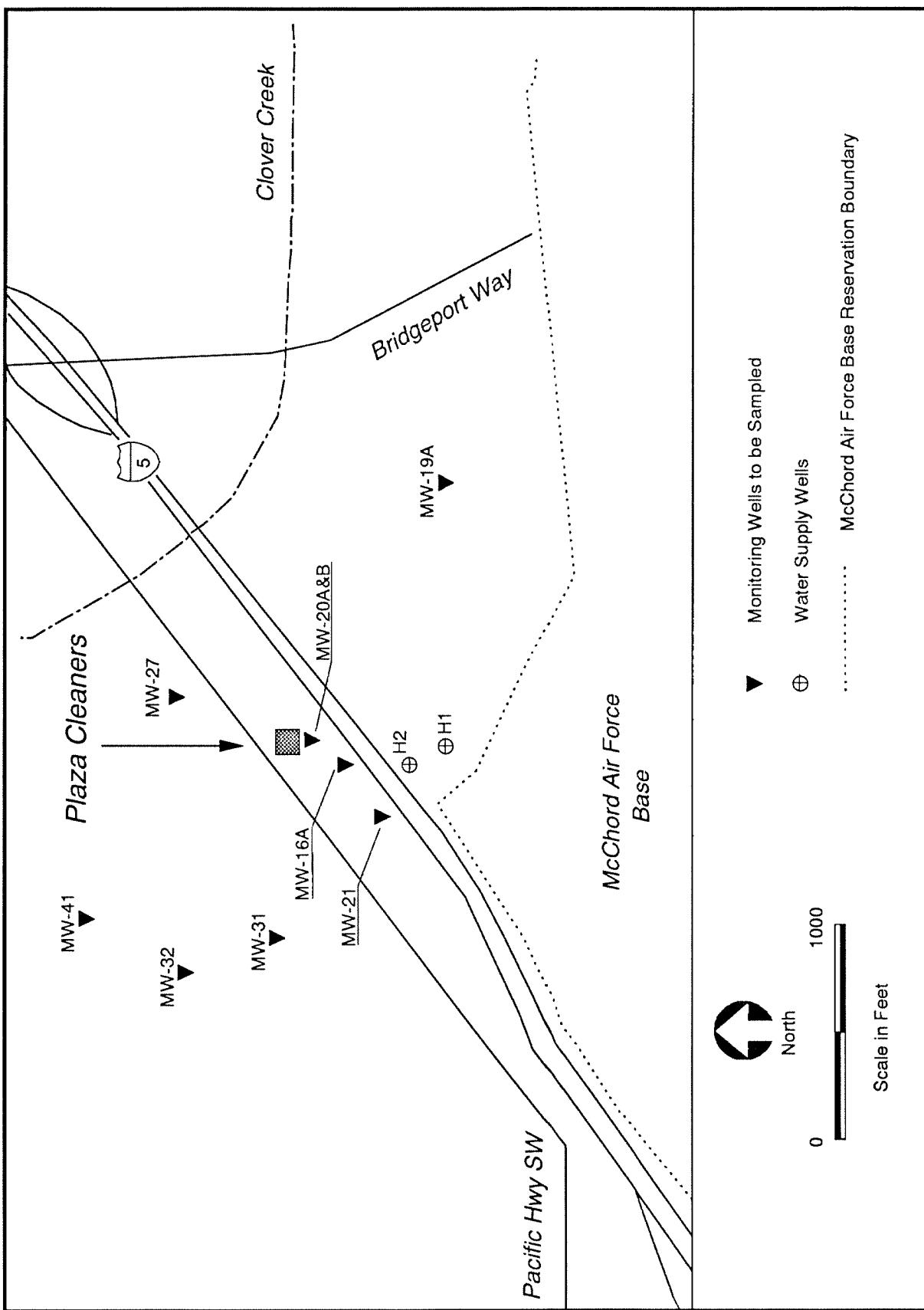


Figure 2: Lakewood/Plaza Cleaners Sample Locations for May 1991

Table 2: Parameters, Analytical Methods and Detection Limits

| Parameters | Analytical Method | Reference | Detection Limit |
|------------------------------------|---------------------------------------|-----------|-------------------------------|
| Field Parameters: | | | |
| Water Level | Slope Indicator Well Probe | NA | 0.05 ft. |
| pH | Beckman pH Meter | NA | 0.1 Std Units |
| Specific Conductance | Beckman RC-15C Conductivity Bridge | NA | 10 $\mu\text{mhos}/\text{cm}$ |
| Temperature | Precision Thermometer | NA | 0.1°C |
| Volatile Organics: | #624 | EPA 1983 | 1-10 $\mu\text{g}/\text{L}$ |
| Major Cations: | | | |
| Sodium | #200.7 | EPA 1983 | 10.0 $\mu\text{g}/\text{L}$ |
| Calcium | #200.7 | EPA 1983 | 1.0 $\mu\text{g}/\text{L}$ |
| Magnesium | #200.7 | EPA 1983 | 1.0 $\mu\text{g}/\text{L}$ |
| Major Anions: | | | |
| Chloride | #429 | APHA 1985 | 0.1 mg/L |
| Carbonate | #406C | APHA 1985 | 1.0 mg/L |
| Bicarbonate | #406C | APHA 1985 | 1.0 mg/L |
| Sulfate | #429 | APHA 1985 | 0.05 mg/L |
| Indicator Parameters: | | | |
| Hardness | #314B | APHA 1985 | 1.0 mg/L |
| Nitrate/Nitrite | #353.2 | EPA 1983 | 0.01 mg/L |
| Total Dissolved Solids | #160.1 | EPA 1983 | 10.0 mg/L |
| Metals (Total Recoverable): | | | |
| Arsenic | #206.2 | EPA 1983 | 1.0 $\mu\text{g}/\text{L}$ |
| Barium | #200.7 | EPA 1983 | 2.0 $\mu\text{g}/\text{L}$ |
| Cadmium | #200.7 | EPA 1983 | 2.0 $\mu\text{g}/\text{L}$ |
| Chromium | #200.7 | EPA 1983 | 3.0 $\mu\text{g}/\text{L}$ |
| Copper | #200.7 | EPA 1983 | 3.0 $\mu\text{g}/\text{L}$ |
| Iron | #200.7 | EPA 1983 | 3.0 $\mu\text{g}/\text{L}$ |
| Lead | #239.2 | EPA 1983 | 1.0 $\mu\text{g}/\text{L}$ |
| Manganese | #200.7 | EPA 1983 | 2.0 $\mu\text{g}/\text{L}$ |
| Mercury | #245.1 | EPA 1983 | 0.2 $\mu\text{g}/\text{L}$ |
| Nickel | #200.7 | EPA 1983 | 4.0 $\mu\text{g}/\text{L}$ |
| Selenium | #270.2 | EPA 1983 | 2.0 $\mu\text{g}/\text{L}$ |
| Silver | #200.7 | EPA 1983 | 3.0 $\mu\text{g}/\text{L}$ |
| Zinc | #200.7 | EPA 1983 | 2.0 $\mu\text{g}/\text{L}$ |

NA = Not Applicable

American Public Health Association, 1985. Standard Methods for the Examination of Water and Wastewater.

U.S. EPA, 1983. Methods for the Chemical Analysis of Water and Wastes. Environmental Monitoring and Support Laboratory, March 1983.

Quality assurance results for volatile organics are summarized below. Estimated concentrations of chloromethane, acetone, methylene chloride, 2-butanone, toluene, and naphthalene were detected in the transfer, transport, and laboratory method blanks, at concentrations at or near the detection limit. The presence of these compounds is attributed to laboratory contamination and are not reported in the tables.

Total dissolved solids analysis was performed after the recommended holding time, therefore the results are qualified with an "H".

Quality assurance results for metals are discussed in a memo from Randy Knox (Appendix A) and are summarized below. Trace amounts of calcium, iron, magnesium, and sodium were detected in the metals method blank. Sample results less than ten times the blank value are flagged with a "B". Sodium results are flagged with an "E" because of analytical interference. Results flagged with a "J" indicate an estimated concentration. Barium, copper, manganese, and zinc are qualified with a "P" because the observed concentration was between the instrumental detection limit and the practical quantitation limit.

Data for this project are acceptable for use. Overall, precision (sampling and laboratory) calculated from detected values in blind duplicate samples was good (relative percent difference being $\pm 10\%$) for all analysis; organics, conventionals, and metals; with the exceptions of 1,2-dichloroethylene (40%), barium (64%), and zinc (57%). Generally, most of the matrix spike and spike duplicate recoveries for volatile organics and metals were within the acceptable limits of $\pm 25\%$ for water sample analysis. Acetone (47%), chloroethane (239%), tetrachloroethene (35%), calcium (67%), iron (66%) and lead (70%) did not meet the acceptable limits for one or both spiked analyses.

Originally the results from sample MW-20B and the replicate sample MW-20A** collected on May 16 were transposed. This was probably due to incorrect labeling of the bottles at the time of sampling. Wells MW-20A and MW-20B were resampled on August 22, and results from these samples were consistent with historical data. The results from May 16 are reported in Table 3 with the appropriate well.

RESULTS

Analytical results are presented in Appendix A. Data were managed using the ENVIS database software package. Tables 3 and 4 are summaries of contaminants found during Sampling Round II conducted on May 15-16, 1991.

Volatile Organics

Volatile organics results are listed in Table 3. Tetrachloroethylene (PERC), trichloroethylene (TCE) and 1,2-dichloroethylene (1,2-DCE) were detected primarily in the main plume. Maximum concentrations of these compounds were detected in wells MW-20B (752 ppb, 16 ppb, and 30 ppb respectively) and MW-16A (26 ppb, 0.6J ppb, and 2 ppb respectively). Low levels

of PERC and 1,2-DCE were detected in wells MW-20A, MW-21, MW-31 and MW-32, all of which were at or near the detection limit. Trans-1,2-dichloroethene, 1,1,1-trichloroethane, and chloroform were also detected as estimated values below the detection limit in well MW-20B.

Samples collected from wells MW-20A and MW-20B on August 22 show consistent results with the historical data. PERC (920 ppb), TCE (16J ppb), and 1,2-DCE (22 ppb), were detected in MW-20B, in addition to low concentrations of trans-1,2-dichloroethene (0.8J ppb), 1,1,1-trichloroethane (0.3J ppb), chloroform (0.2J ppb), vinyl chloride (0.3J ppb), and chlorobenzene (0.1J ppb). 1,1,1-trichloroethane was detected in MW-20A at a concentration of 0.2J ppb.

Conventional Constituents and Metals

Water quality results for conventionals and metals samples collected from MW-16A, MW-19A, and MW-32 are shown in Table 4.

Maximum observed concentrations for both conventionals and metals are as follows: total dissolved solids (219H mg/L), hardness (95.9 mg/L), nitrite/nitrate-N (2.2 mg/L), chloride (7.2 mg/L), sulfate (14.8 mg/L), bicarbonate (82 mg/L), barium (4.3P μ g/L), calcium (21.8J mg/L), copper (3.5P μ g/L), iron (5.5JB μ g/L), magnesium (9.29J mg/L), manganese (1.5P μ g/L), mercury 0.05J μ g/L), sodium (8.3E mg/L), and zinc (8.8J μ g/L).

DISCUSSION AND CONCLUSIONS

Volatile Organics

Concentrations of volatile organic contaminants found in the main plume are similar to past results. Appendix B presents concentrations of TCE and PERC measured in monitoring wells at the Lakewood site over the history of the project. The historical maximum concentrations for TCE and PERC were recorded in March 1985 in well MW-20B at 103 ppb and 4,856 ppb respectively. During this sample round, the highest concentrations of PERC, TCE and 1,2-DCE were found in well MW-20B, with maximum concentrations of 752 ppb, 16 ppb, and 30 ppb respectively. This well is close to Plaza Cleaners, is centrally located over the main plume, and is screened in the Vashon Till. Low concentrations of PERC, TCE, and 1,2-DCE were also detected in MW-16A with concentrations of 26 ppb, 0.6J ppb, and 2 ppb respectively. MW-16A is screened in the main aquifer below the more highly contaminated Vashon Till.

Although MW-16A is further from the source, the concentration of PERC and 1,2-DCE have consistently been higher in this well than that measured in MW-20A (See Figure 2). This may be due to the location of lenses of higher conductive material in the overlying contaminated Vashon Till that would allow downward migration of contaminants to the main aquifer.

Table 3: Summary of Analytes Detected in Samples Collected During May 15–16, 1991

| | Main Plume | | | | | | Uncaptured Plume | | | MCAFB MW-19A |
|-----------------------------------|------------|---------|--------|----------|--------|-------|------------------|-------|-------|-----------------|
| | MW-16A | MW-16B* | MW-20A | MW-20A** | MW-20B | MW-21 | MW-27 | MW-31 | MW-32 | |
| Volatile Organics: (ug/L) | | | | | | | | | | |
| Tetrachloroethylene (PERC) | 26 | 28 | 0.4 J | 0.4 J | 752 | 2 | 1.0 U | 0.6 J | 1 | 1.0 U |
| Trichloroethylene (TCE) | 0.6 J | 0.6 J | 1.0 U | 1.0 U | 16 | 1.0 U | 1.0 U | 1.0 U | 1.0 U | -- |
| 1,2-Dichloroethylene (1,2-DCE) | 2 | 3 | 1.0 U | 1.0 U | 30 | 0.7 J | 1.0 U | 2 | 2 | 1.0 U |
| Trans-1,2-Dichloroethene | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 0.5 J | 1.0 U | 1.0 U | 1.0 U | 1.0 U | -- |
| 1,1,1-Trichloroethane | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 0.3 J | 1.0 U | 1.0 U | 1.0 U | 1.0 U | -- |
| Chloroform | 1.0 U | 1.0 U | 1.0 U | 1.0 U | 0.2 J | 1.0 U | 1.0 U | 1.0 U | 1.0 U | -- |

* = Duplicate

** = Replicate

-- = Not analyzed

U = Not detected at detection limit shown

J = Observed concentration between instrumental detection limit and practical quantitation limit

Table 4: Summary of Sample Results Collected During May 15–16, 1991

| | Main Plume | | Uncaptured Plume | MCAFB |
|-------------------------------------|------------|---------|------------------|--------|
| | MW-16A | MW-16B* | MW-32 | MW-19A |
| Indicator Parameters: (mg/L) | | | | |
| TDS | 149 H | 157 H | 219 H | 138 H |
| Hardness | 96 | 94 | 86 | 90 |
| NO ₂ -NO ₃ | 2.2 | 2.2 | 2.1 | 1.4 |
| Major Anions: (mg/L) | | | | |
| Chloride | 6.9 | 6.9 | 7.2 | 4.7 |
| Sulfate | 14 | 15 | 11 | 11 |
| Bicarbonate | 82 | 81 | 74 | 78 |
| Carbonate | 1 U | 1 U | 1 U | 1 U |
| Trace Metals: (ug/L) | | | | |
| Arsenic | 30 UJ | 30 UJ | 30 UJ | 30 UJ |
| Barium | 2.2 P | 4.3 P | 1.6 P | 1.7 P |
| Cadmium | 2.0 U | 2.0 U | 2.0 U | 2.0 U |
| Calcium (mg/L) | 21 J | 22 J | 20 | 18 |
| Chromium | 5.0 U | 5.0 U | 5.0 U | 5.0 U |
| Copper | 3.0 U | 3.5 P | 3.0 U | 3.0 U |
| Iron | 2.0 UJ | 5.5 JB | 2.0 UJ | 2.0 UJ |
| Lead | 20 UJ | 20 UJ | 20 UJ | 20 UJ |
| Magnesium (mg/L) | 8.9 | 9.3 J | 8 | 8.6 |
| Manganese | 1.0 U | 1.5 P | 1.0 U | 1.0 U |
| Mercury | 0.04 U | 0.04 U | 0.04 U | 0.05 J |
| Nickel | 10 U | 10 U | 10 U | 10 U |
| Selenium | 50 UJ | 50 UJ | 50 UJ | 50 UJ |
| Sodium (mg/L) | 7.5 E | 8.3 E | 6.6 E | 6.3 E |
| Zinc | 4.7 P | 8.5 P | 8.8 J | 6.9 P |

* = Duplicate

H = Exceeded recommended holding time

U = Not detected at detection limit shown

J = Estimated value

P = Observed concentration between instrumental detection limit and practical quantitation limit

B = Analyte detected in method blank

E = Estimated value due to presence of interference

Monitoring wells MW-41 and MW-32 were sampled to assess the quality of ground water in the uncaptured portion of the plume. PERC and 1,2-DCE were detected at low concentrations in MW-32 only.

Conventional Constituents and Metals

Water quality samples were collected from wells MW-16A, MW-32 and MW-19A. Results for both conventionals and metals tended to be slightly higher in well MW-16A, located in the main plume, but were still well below state and federal drinking water criteria. Of the three wells sampled for metals analysis, barium, calcium, copper, iron, magnesium, manganese, mercury, sodium, and zinc were detected at low concentrations.

Proposed baseline water quality sampling is completed with this sampling event.

REFERENCES

APHA, AWWA, WPCF. Standard Methods for the Examination of Water and Wastewater. 16th ed., Washington, D.C., 1985.

EPA. Final Draft Remedial Investigation Report - Ponder's Corner, Washington. EPA 112-OL22, 1985.

EPA. Methods for Chemical Analysis of Water and Wastes. EMSL Cincinnati, Ohio, EPA 600/4-79-020, 1983.

Huntamer. Department of Ecology Laboratory Users Manual. 1986.

PM:blt

cc: Bill Yake
Nancy Winters

APPENDIX A

Analytical Results
Lakewood/Plaza Cleaners
May 15–16, 1991

**WASHINGTON STATE DEPARTMENT OF ECOLOGY
ENVIRONMENTAL INVESTIGATIONS AND LABORATORY SERVICES
MANCHESTER LABORATORY**

July 23, 1991

TO: Pamela Marti
FROM: Randy Knox *DPL*

SUBJECT: QA Summary on Dissolved Water Samples

SAMPLE RECEIPT:

The samples from the Lakewood Plaza Cleaners project were received by the Manchester Laboratory on 5/17/91 in good condition.

HOLDING TIMES:

All analyses were performed within the specified holding times for metals analysis (28 days for mercury, 180 days for all other metals).

INSTRUMENT CALIBRATION:

Instrument calibration was performed before each analytical run and checked by initial calibration verification standards and blanks. Continuing calibration standards and blanks were analyzed at a frequency of 10% during the run and again at the end of the analytical run. All initial and continuing calibration verification standards were within the control limits of +/- 10%. AA calibration gave correlation coefficients greater than the criteria of 0.995. A correlation coefficient of 0.995 or higher means that the calibration is acceptable.

PROCEDURAL BLANKS:

The procedural blanks associated with these samples showed no detectable levels of analytes other than calcium, iron, magnesium, and sodium. Where these elements are detected at concentrations <10X the blank level, the analysis is flagged with a B to indicate blank contamination.

SPIKED SAMPLE ANALYSIS:

Spiked sample and duplicate spiked sample analysis were performed on sample number(s) 208093 and 208092 for mercury. All spike recoveries were within the acceptable limits of +/- 25% for water sample analysis except those for calcium, iron and lead on one duplicate (67%, 66%, and 70% respectively). Lead is low likely due to the fact it was spiked at levels more appropriate to furnace work than ICP analysis. Data on these elements are flagged with a

J to indicate they are estimated quantities. Arsenic, selenium and manganese were not spiked at ICP levels and recovery is not calculated. These elements are also flagged with a J.

PRECISION DATA:

The duplicate results of the spiked and duplicate spiked sample were used to calculate precision related to the analysis of these samples. The % RPD for all parameters was within the +/- 20% window for duplicate analysis with the exception of iron and magnesium.

ICP SERIAL DILUTION ANALYSIS:

The Relative Percent Difference (RPD) between sample results and the results for a serial dilution of the same sample were less than 10%. Sodium is an exception. Data is flagged with an E to indicate interference.

SUMMARY:

The data generated by the analysis of the above referenced samples can be used with qualification of results on arsenic, manganese, arsenic, selenium, iron and lead for low spike recovery or the absence of recovery data. Sodium is qualified for interference problems and two samples have qualified data for calcium, magnesium sodium and iron due to blank contamination.

If you have any questions about the results or the methods used to obtain these results please call me at SCAN 744-4737.

cc Bill Kammin

Project: DOE-003D LAKEWOOD/PLAZA CLEANERS

Officer: PZM Account: D3P11

Laboratory: Ecology, Manchester

Sample No: 91 208080

Description: MW-41

Begin Date: 91/05/15 :

Source: Well (Test/Observation)

| | VOA - PP Scan (GCMS) | Water-Total | VOA - PP Scan (GCMS) | Water-Total |
|---|----------------------|-------------|--------------------------|-------------|
| | Result | Units | Result | Units |
| Carbon Tetrachloride | 1U | ug/l | | |
| Acetone | 2UJ | ug/l | Bromobenzene | 1U ug/l |
| Chloroform | 1U | ug/l | Toluene | , 1U ug/l |
| Benzene | 1U | ug/l | Chlorobenzene | 1U ug/l |
| 1,1,1-Trichloroethane | 1U | ug/l | 1,2,4-Trichlorobenzene | 1U ug/l |
| Chloromethane | 1UJ | ug/l | Dibromochloromethane | 1U ug/l |
| Dibromomethane | 1U | ug/l | Tetrachloroethene | 1U ug/l |
| Bromochloromethane | 1U | ug/l | Sec-Butylbenzene | 1U ug/l |
| Chloroethane | 1U | ug/l | 1,3-Dichloropropane | 1U ug/l |
| Vinyl Chloride | 1U | ug/l | Cis-1,2-Dichloroethene | 1U ug/l |
| Methylene Chloride | 1U | ug/l | trans-1,2-Dichloroethene | 1U ug/l |
| Carbon Disulfide | 1U | ug/l | 1,3-Dichlorobenzene | 1U ug/l |
| Bromoform | 1U | ug/l | 1,1-Dichloropropene | 1U ug/l |
| Bromodichloromethane | 1U | ug/l | 2,2-Dichloropropane | 1U ug/l |
| 1,1-Dichloroethane | 1U | ug/l | 2-Hexanone | 1U ug/l |
| 1,1-Dichloroethene | 1U | ug/l | Ethane, 1,1,1,2-Tetrac | 1U ug/l |
| Trichlorofluoromethane | 1U | ug/l | cis-1,3-Dichloropropene | 1U ug/l |
| Methane, Dichlorodiflu+ | 1U | ug/l | trans-1,3-Dichloroprop | 1U ug/l |
| 1,2-Dichloropropane | 2UJ | ug/l | p-Bromofluorobenzene | 100 % Recov |
| 2-Butanone | 1U | ug/l | Surrog: 1-Bromo-2-Fluo+ | 104 % Recov |
| 1,1,2-Trichloroethane | 1U | ug/l | D4-1,2-Dichlorobenzene | 99 % Recov |
| Trichloroethene | 1U | ug/l | d8-Toluene | 99 % Recov |
| ETHANE, 1,1,2,2-TETRAC+ | 1U | ug/l | d4-1,2-Dichloroethane | 102 % Recov |
| 1,2,3-Trichlorobenzene | 1U | ug/l | | |
| Hexachlorobutadiene | 1U | ug/l | | |
| Naphthalene | 1UJ | ug/l | | |
| 2-Chlorotoluene | 1U | ug/l | | |
| 1,2-Dichlorobenzene | 1U | ug/l | | |
| 1,2,4-Trimethylbenzene | 1U | ug/l | | |
| 1,2-Dibromo-3-chloropr+ | 1U | ug/l | | |
| 1,2,3-Trichloropropane | 1U | ug/l | | |
| Tert-Butylbenzene | 1U | ug/l | | |
| Isopropylbenzene (Cum+ | 1U | ug/l | | |
| P-isopropyltoluene | 1U | ug/l | | |
| Ethylbenzene | 1U | ug/l | | |
| BENZENE, ETHENYL-(STYR+ BENZENE, PROPYL- | 1U | ug/l | | |
| Butylbenzene | 1U | ug/l | | |
| 4-Chlorotoluene | 1U | ug/l | | |
| 1,4-Dichlorobenzene | 1U | ug/l | | |
| 1,2-Dibromoethane (EDB) | 1U | ug/l | | |
| 1,2-Dichloroethane | 1U | ug/l | | |
| 4-Methyl-2-Pentanone | 1U | ug/l | | |
| 1,3,5-Trimethylbenzene | 1U | ug/l | | |

(Sample Complete)

Project: DOE-0003D LAKEWOOD/PLAZA CLEANERS

Laboratory: Ecology, Manchester
Officer: PZM
Account: D3P11

Sample No: 91 208081 Description: MW-27

Begin Date: 91/05/15 :

| | VOA - PP Scan (GCMS) | Water-Total | Result | Units | VOA - PP Scan (GCMS) | Water-Total | Result | Units |
|------------------------------------|----------------------|-------------|-------------------------------------|-------|----------------------|---------------------------|--------|---------|
| Carbon Tetrachloride | 1U | ug/1 | Bromobenzene | 1U | ug/1 | Bromobenzene | 1U | ug/1 |
| Acetone | 3UJ | ug/1 | Toluene | 1U | ug/1 | Toluene | 1U | ug/1 |
| Chloroform | 1U | ug/1 | Chlorobenzene | / | | | | |
| Benzene | 1U | ug/1 | 1,2,4-Trichlorobenzene | 1U | ug/1 | Dibromoethane | 1U | ug/1 |
| 1,1,1-Trichloroethane | 1U | ug/1 | Tetrachloroethene | 1U | ug/1 | Sec-Butylbenzene | 1U | ug/1 |
| Chloromethane | 1UJ | ug/1 | 1,3-Dichloropropane | 1U | ug/1 | Cis-1,2-Dichloroethene | 1U | ug/1 |
| Bromoform | 1U | ug/1 | trans-1,2-Dichloroethene | 1U | ug/1 | 1,3-Dichlorobenzene | 1U | ug/1 |
| Bromoform | 1U | ug/1 | 1,1-Dichloropropane | 1U | ug/1 | 1,1,2-Tetrachloroethene | 1U | ug/1 |
| Chloroethane | 1U | ug/1 | 2,2-Dichloropropane | 1U | ug/1 | cis-1,3-Dichloropropene | 1U | ug/1 |
| Vinyl Chloride | 1U | ug/1 | 2-Hexanone | 1U | ug/1 | trans-1,3-Dichloropropene | 1U | ug/1 |
| Methylene Chloride | 1U | ug/1 | Ethane, 1,1,1,2-Tetrachloroethene | 1U | ug/1 | p-Bromofluorobenzene | 100 | % Recov |
| Carbon Disulfide | 1U | ug/1 | 1,1-Dichloroethane | 1U | ug/1 | Surrog: 1-Bromo-2-Fluo+ | 97 | % Recov |
| Bromoform | 1U | ug/1 | Trichloroethene | 1U | ug/1 | D4-1,2-Dichlorobenzene | 98 | % Recov |
| Bromodichloromethane | 1U | ug/1 | 1,2-Dichloropropane | 1UJ | ug/1 | d8-Toluene | 97 | % Recov |
| 1,1-Dichloroethane | 1U | ug/1 | 2-Butanone | 1U | ug/1 | d4-1,2-Dichloroethane | 104 | % Recov |
| 1,1-Dichloroethene | 1U | ug/1 | Trichloroethene | 1U | ug/1 | | | |
| Trichloroform | 1U | ug/1 | METHANE, 1,1,2,2-TETRACHLOROBENZENE | 1U | ug/1 | | | |
| Methane, Dichlorodifluoromethane | 1U | ug/1 | 1,2,3-Trichlorobutadiene | 1UJ | ug/1 | | | |
| 1,2-Dichloropropane | 1U | ug/1 | Naphthalene | 1U | ug/1 | | | |
| 2-Butanone | 1UJ | ug/1 | Benzene, 1,2-Dimethyl | 1U | ug/1 | | | |
| Trichloroethene | 1U | ug/1 | 2-Chlorotoluene | 1U | ug/1 | | | |
| ETHANE, 1,1,2,2-TETRACHLOROBENZENE | 1U | ug/1 | 1,2-Dichlorobenzene | 1U | ug/1 | | | |
| 1,2,3-Trichlorobutadiene | 1U | ug/1 | 1,2,4-Trimethylbenzene | 1U | ug/1 | | | |
| Naphthalene | 1UJ | ug/1 | 1,2-Dibromo-3-chloropropane | 1U | ug/1 | | | |
| Benzene, 1,2-Dimethyl | 1U | ug/1 | 1,2,3-Trichloropropane | 1U | ug/1 | | | |
| 2-Chlorotoluene | 1U | ug/1 | Tert-Butylbenzene | 1U | ug/1 | | | |
| 1,2-Dichlorobenzene | 1U | ug/1 | Isopropylbenzene (Cumene) | 1U | ug/1 | | | |
| 1,2,4-Trimethylbenzene | 1U | ug/1 | P-Isopropyltoluene | 1U | ug/1 | | | |
| 1,2-Dibromo-3-chloropropane | 1U | ug/1 | Ethylbenzene | 1U | ug/1 | | | |
| 1,2,3-Trichloropropane | 1U | ug/1 | BENZENE, ETHENYL-(STYR+) | 1U | ug/1 | | | |
| Tert-Butylbenzene | 1U | ug/1 | BENZENE, PROPYL- | 1U | ug/1 | | | |
| Isopropylbenzene (Cumene) | 1U | ug/1 | 4-Chlorotoluene | 1U | ug/1 | | | |
| P-Isopropyltoluene | 1U | ug/1 | 1,4-Dichlorobenzene | 1U | ug/1 | | | |
| Ethylbenzene | 1U | ug/1 | 1,2-Dibromoethane (EDB) | 1U | ug/1 | | | |
| BENZENE, ETHENYL-(STYR+) | 1U | ug/1 | 1,2-Dichloroethane | 1U | ug/1 | | | |
| BENZENE, PROPYL- | 1U | ug/1 | 4-Methyl-2-Pentanone | 1U | ug/1 | | | |
| 4-Chlorotoluene | 1U | ug/1 | 1,3,5-Trimethylbenzene | 1U | ug/1 | | | |

(Sample Complete)

13:14:04

Sample/Project Analysis Results

Project: DOE-003D LAKEWOOD/PLAZA CLEANERS

Laboratory: Ecology, Manchester

Sample No: 91 208082 Description: MW-20A

Begin Date: 91/05/15 :

| | VOA - PP Scan (GCMS) | Water-Total | Result | Units | VOA - PP Scan (GCMS) | Water-Total | Result | Units |
|-------------------------|----------------------|-------------|--------------------------|-------|----------------------|-------------|--------|-------|
| Carbon Tetrachloride | 1U | ug/l | Bromobenzene | 1U | ug/l | | | |
| Acetone | 3UJ | ug/l | Toluene | / | 1U | ug/l | | |
| Chloroform | 1U | ug/l | Chlorobenzene | / | 1U | ug/l | | |
| Benzene | 1U | ug/l | 1,2,4-Trichlorobenzene | 1U | ug/l | | | |
| 1,1,1-Trichloroethane | 1UJ | ug/l | Dibromochloromethane | 1U | ug/l | | | |
| Chloromethane | 1U | ug/l | Tetrachloroethene | 0.4J* | ug/l | | | |
| Dibromomethane | 1U | ug/l | Sec-Butylbenzene | 1U | ug/l | | | |
| Bromoform | 1U | ug/l | 1,3-Dichloropropane | 1U | ug/l | | | |
| Chloroethane | 1U | ug/l | Cis-1,2-Dichloroethene | 1U | ug/l | | | |
| Vinyl Chloride | 1U | ug/l | trans-1,2-Dichloroethene | 1U | ug/l | | | |
| Methylene Chloride | 1U | ug/l | 1,3-Dichlorobenzene | 1U | ug/l | | | |
| Carbon Disulfide | 1U | ug/l | 1,1-Dichloropropene | 1U | ug/l | | | |
| Bromoform | 1U | ug/l | 2,2-Dichloropropane | 1U | ug/l | | | |
| Bromodichloromethane | 1U | ug/l | 2-Hexanone | 1U | ug/l | | | |
| 1,1-Dichloroethane | 1U | ug/l | Ethane, 1,1,1,2-Tetrac+ | 1U | ug/l | | | |
| 1,1-Dichloroethene | 1U | ug/l | cis-1,3-Dichloropropene | 1U | ug/l | | | |
| Trichlorofluoromethane | 1U | ug/l | trans-1,3-Dichloroprop+ | 1U | ug/l | | | |
| Methane, Dichlorodiflu+ | 1U | ug/l | P-Bromofluorobenzene | 96 | % Recov | | | |
| 1,2-Dichloropropane | 1U | ug/l | Surrog: 1-Bromo-2-Fluo+ | 104 | % Recov | | | |
| 2-Butanone | 2UJ | ug/l | D4-1,2-Dichlorobenzene | 99 | % Recov | | | |
| 1,1,2-Trichloroethane | 1U | ug/l | d8-Toluene | 96 | % Recov | | | |
| Trichloroethen | 1U | ug/l | d4-1,2-Dichloroethane | 100 | % Recov | | | |
| ETHANE, 1,1,2,2-TETRAC+ | 1U | ug/l | | | | | | |
| 1,2,3-Trichlorobenzene | 1U | ug/l | | | | | | |
| Hexachlorobutadiene | 1U | ug/l | | | | | | |
| Naphthalene | 1UJ | ug/l | | | | | | |
| Benzene, 1,2-Dimethyl | 1U | ug/l | | | | | | |
| 2-Chlorotoluene | 1U | ug/l | | | | | | |
| 1,2-Dichlorobenzene | 1U | ug/l | | | | | | |
| 1,2,4-Trimethylbenzene | 1U | ug/l | | | | | | |
| 1,2-Dibromo-3-chloropr+ | 1U | ug/l | | | | | | |
| 1,2,3-Trichloropropane | 1U | ug/l | | | | | | |
| Tert-Butylbenzene | 1U | ug/l | | | | | | |
| Isopropylbenzene (Cum+ | 1U | ug/l | | | | | | |
| P-Isopropyltoluene | 1U | ug/l | | | | | | |
| Ethylbenzene | 1U | ug/l | | | | | | |
| BENZENE, ETHENYL-(STYR+ | 1U | ug/l | | | | | | |
| BENZENE, PROPYL- | 1U | ug/l | | | | | | |
| Butylbenzene | 1U | ug/l | | | | | | |
| 4-Chlorotoluene | 1U | ug/l | | | | | | |
| 1,4-Dichlorobenzene | 1U | ug/l | | | | | | |
| 1,2-Dibromoethane (EDB) | 1U | ug/l | | | | | | |
| 1,2-Dichloroethane | 1U | ug/l | | | | | | |
| 4-Methyl-1-2-Pentanone | 1U | ug/l | | | | | | |
| 1,3,5-Trimethylbenzene | 1U | ug/l | | | | | | |

(Sample Complete)

Account: D3P11

Officer: PZM

Source: Well (Test/Observation)

29-JUL-91
13:14:04

Washington State Department of Ecology
Sample/Project Analysis Results

Project: DOE-003D LAKEWOOD/PLAZA CLEANERS

Laboratory: Ecology, Manchester

Sample No: 91 208083

Description: MW-32

Begin Date: 91/05/15 :

| + VOA - PP Scan (GCMS) | Water-Total | Result | Units | + VOA - PP Scan (GCMS) | Water-Total | Result | Units |
|--------------------------|-------------|--------|-------|---------------------------|-------------|---------|-------|
| Carbon Tetrachloride | 5UJ | ug/1 | | Bromobenzene | / | 1U | ug/1 |
| Acetone | 1U | ug/1 | | Toluene | / | 1U | ug/1 |
| Chloroform | 1U | ug/1 | | Chlorobenzene | / | 1U | ug/1 |
| Benzene | 1U | ug/1 | | 1,2,4-Trichlorobenzene | / | 1U | ug/1 |
| 1,1,1-Trichloroethane | 1UJ | ug/1 | | Dibromo-chloromethane | / | 1U | ug/1 |
| Chloromethane | 1U | ug/1 | | Tetrachloroethene | 1 * | ug/1 | |
| Dibromomethane | 1U | ug/1 | | Sec-Butylbenzene | 1U | ug/1 | |
| Bromo-chloromethane | 1U | ug/1 | | 1,3-Dichloropropane | 1U | ug/1 | |
| Chloroethane | 1U | ug/1 | | Cis-1,2-Dichloroethene | 2 * | ug/1 | |
| Vinyl Chloride | 1U | ug/1 | | trans-1,2-Dichloroethene+ | 1U | ug/1 | |
| Methylene Chloride | 1U | ug/1 | | 1,3-Dichlorobenzene | 1U | ug/1 | |
| Carbon Disulfide | 1U | ug/1 | | 1,1-Dichloropropane | 1U | ug/1 | |
| Bromoform | 1U | ug/1 | | 2,2-Dichloropropane | 1U | ug/1 | |
| Bromodichloromethane | 1U | ug/1 | | 2-Hexanone | 1U | ug/1 | |
| 1,1-Dichloroethane | 1U | ug/1 | | Ethane, 1,1,1,2-Tetrac- | 1U | ug/1 | |
| 1,1-Dichloroethene | 1U | ug/1 | | cis-1,3-Dichloropropene | 1U | ug/1 | |
| Trichlorofluoromethane | 1U | ug/1 | | trans-1,3-Dichloroprop- | 1U | ug/1 | |
| Methane, Dichlorodiflu- | 1U | ug/1 | | 1,2-Dichloropropane | 97 | % Recov | |
| 1,2-Dichloropropane | 1U | ug/1 | | P-Bromofluorobenzene | 105 | % Recov | |
| 2-Butanone | 2UJ | ug/1 | | Surrog: 1-Bromo-2-Fluo- | 105 | % Recov | |
| 1,1,2-Trichloroethane | 1U | ug/1 | | D4-1,2-Dichlorobenzene | 101 | % Recov | |
| Trichloroethene | 1U | ug/1 | | d8-Toluene | 101 | % Recov | |
| ETHANE, 1,1,2,2-TETRAC- | 1U | ug/1 | | d4-1,2-Dichloroethane | 104 | % Recov | |
| 1,2,3-Trichlorobenzene | 1U | ug/1 | | Naphthalene | 1UJ | ug/1 | |
| Hexachlorobutadiene | 1U | ug/1 | | 2-Chlorotoluene | 1U | ug/1 | |
| Naphthalene | 1U | ug/1 | | 1,2-Dichlorobenzene | 1U | ug/1 | |
| 1,2-Dimethyl | 1U | ug/1 | | 1,2,4-Trimethylbenzene | 1U | ug/1 | |
| 2-Chlorotoluene | 1U | ug/1 | | 1,2-Dibromo-3-chloropr- | 1U | ug/1 | |
| 1,2-Dichlorobenzene | 1U | ug/1 | | 1,2,3-Trichloropropane | 1U | ug/1 | |
| 1,4-Dichlorobenzene | 1U | ug/1 | | Tert-Butylbenzene | 1U | ug/1 | |
| 1,2-Dibromoethane (EDB) | 1U | ug/1 | | Isopropylbenzene (Cumene) | 1U | ug/1 | |
| 1,2-Dichloroethane | 1U | ug/1 | | p-Isopropyltoluene | 1U | ug/1 | |
| Ethylbenzene | 1U | ug/1 | | Ethyleneglycol | 1U | ug/1 | |
| BENZENE, ETHENYL-(STYR+) | 1U | ug/1 | | 1,2-Dimethylbenzene | 1U | ug/1 | |
| Butylbenzene | 1U | ug/1 | | 4-Chlorotoluene | 1U | ug/1 | |
| 4-Chlorotoluene | 1U | ug/1 | | 1,2-Dibromoethane | 1U | ug/1 | |
| 1,4-Dichlorobenzene | 1U | ug/1 | | 1,2-Dichloroethane | 1U | ug/1 | |
| 4-Methyl-2-Pentanone | 1U | ug/1 | | 4-Methyl-2-Pentanone | 1U | ug/1 | |
| 1,3,5-Trimethylbenzene | 1U | ug/1 | | 1,3,5-Trimethylbenzene | 1U | ug/1 | |

(Sample Complete)

Source: Well (Test/Observation)

Officer: PZM Account: D3P11

29-JUL-91
13:14:04

Washington State Department of Ecology
Sample / Project Analysis Results

Project: DOE-003D LAKEWOOD / PLAZA CLEANERS

Laboratory: Ecology, Manchester

Sample No: 91 208084

Description: MW-31

Begin Date: 91/05/16 :

| | VOA - PP Scan (GCMS) | Water-Total Result Units | VOA - PP Scan (GCMS) Result Units | Water-Total Result *** Units |
|---|----------------------|-----------------------------|--------------------------------------|------------------------------------|
| Carbon Tetrachloride | 1U | ug/1 | Bromobenzene | 1U ug/1 |
| Acetone | 3UJ | ug/1 | Toluene | 1U ug/1 |
| Chloroform | 1U | ug/1 | Chlorobenzene | 1U ug/1 |
| Benzene | 1U | ug/1 | 1,2,4-Trichlorobenzene | 1U ug/1 |
| 1,1,1-Trichloroethane | 1UJ | ug/1 | DibromoChloromethane | 1U ug/1 |
| Chloromethane | 1UJ | ug/1 | Tetrachloroethene | 0.6J* |
| Dibromomethane | 1U | ug/1 | Sec-Butylbenzene | 1U ug/1 |
| BromoChloromethane | 1U | ug/1 | 1,3-Dichloropropane | 1U ug/1 |
| Chloroethane | 1U | ug/1 | Cis-1,2-Dichloroethene | 2* |
| Vinyl Chloride | 1U | ug/1 | trans-1,2-Dichloroethene+ | 1U ug/1 |
| Methylene Chloride | 1U | ug/1 | 1,3-Dichlorobenzene | 1U ug/1 |
| Carbon Disulfide | 1U | ug/1 | 1,1-Dichloropropene | 1U ug/1 |
| Bromoform | 1U | ug/1 | 2,2-Dichloropropane | 1U ug/1 |
| BromoDichloromethane | 1U | ug/1 | 2-Hexanone | 1U ug/1 |
| 1,1-Dichloroethane | 1U | ug/1 | Ethane, 1,1,1,2-Tetrac+ | 1U ug/1 |
| 1,1-Dichloroethene | 1U | ug/1 | cis-1,3-Dichloropropene | 1U ug/1 |
| TrichloroFluoromethane | 1U | ug/1 | trans-1,3-Dichloropropene | 1U ug/1 |
| Methane, Dichlorodiflu+ | 1U | ug/1 | p-Bromofluorobenzene | 103 % Recov |
| 1,2-Dichloropropane | 1U | ug/1 | Surrog: 1-Bromo-2-Fluo+ | 106 % Recov |
| 2-Butanone | 2UJ | ug/1 | D4-1,2-Dichlorobenzene | 95 % Recov |
| 1,1,2-Trichloroethane | 1U | ug/1 | d8-Toluene | 100 % Recov |
| Trichloroethene | 1U | ug/1 | d4-1,2-Dichloroethane | 99 % Recov |
| ETHANE, 1,1,2,2-TETRAC+ | 1U | ug/1 | | |
| 1,2,3-Trichlorobenzene | 1U | ug/1 | | |
| Hexachlorobutadiene | 1U | ug/1 | | |
| Naphthalene | 1UJ | ug/1 | | |
| Benzene, 1,2-Dimethyl | 1U | ug/1 | | |
| 2-Chlorotoluene | 1U | ug/1 | | |
| 1,2-Dichlorobenzene | 1U | ug/1 | | |
| 1,2,4-Trimethylbenzene | 1U | ug/1 | | |
| 1,2-Dibromo-3-chloropropane | 1U | ug/1 | | |
| 1,2,3-Trichloropropane | 1U | ug/1 | | |
| Tert-Butylbenzene | 1U | ug/1 | | |
| Isopropylbenzene (Cumene) | 1U | ug/1 | | |
| P-Isopropyltoluene | 1U | ug/1 | | |
| Ethylnbenzene | 1U | ug/1 | | |
| BENZENE, ETHENYL-(STYR+ BENZENE, PROPYL- Butylbenzene | 1U | ug/1 | | |
| 4-Chlorotoluene | 1U | ug/1 | | |
| 1,4-Dichlorobenzene | 1U | ug/1 | | |
| 1,2-Dibromoethane (EDB) | 1U | ug/1 | | |
| 1,2-Dichloroethane | 1U | ug/1 | | |
| 4-Methyl-2-Pentanone | 1U | ug/1 | | |
| 1,3,5-Trimethylbenzene | 1U | ug/1 | | |

Source: Well (Test/Observation)

Officer: PZM

Account: D3P11

(Sample Complete)

Project: DOE-003D LAKWOOD/PLAZA CLEANERS

Laboratory: Ecology, Manchester
Sample No: 91 208085 Description: MW-21

Begin Date: 91/05/16 :

Source: Well 1 (Test/Observation)

Officer: PZM Account: D3P11

| | VOA - PP Scan (GCMS) | Water-Total | Result | Units | VOA - PP Scan (GCMS) | Continued *** | Water-Total | Result | Units |
|---------------------------|----------------------|-------------|---------------------------|-------|----------------------|---------------|-------------|--------|-------|
| Carbon Tetrachloride | 1U | ug/1 | Bromobenzene | 1U | ug/1 | | | | |
| Acetone | 4UJ | ug/1 | Toluene | 1U | ug/1 | | | | |
| Chloroform | 1U | ug/1 | Chlorobenzene | 1U | ug/1 | | | | |
| Benzene | 1U | ug/1 | 1,2,4-Trichlorobenzene | 1U | ug/1 | | | | |
| 1,1,1-Trichloroethane | 1UJ | ug/1 | Dibromochloromethane | 1U | ug/1 | | | | |
| Chloromethane | 1U | ug/1 | Tetrachloroethene | 2 * | ug/1 | | | | |
| Dibromoethane | 1U | ug/1 | Sec-Butylbenzene | 1U | ug/1 | | | | |
| Bromoethylmethane | 1U | ug/1 | 1,3-Dichloropropane | 1U | ug/1 | | | | |
| Chloroethane | 1U | ug/1 | Cis-1,2-Dichloroethene | 0.7J* | ug/1 | | | | |
| Vinyl Chloride | 1U | ug/1 | trans-1,2-Dichloroethene+ | 1U | ug/1 | | | | |
| Methylene Chloride | 1U | ug/1 | 1,3-Dichlorobenzene | 1U | ug/1 | | | | |
| Carbon Disulfide | 1U | ug/1 | 1,1-Dichloropropane | 1U | ug/1 | | | | |
| Bromoform | 1U | ug/1 | 2,2-Dichloropropane | 1U | ug/1 | | | | |
| Bromodichloromethane | 1U | ug/1 | 2-Hexanone | 1U | ug/1 | | | | |
| 1,1-Dichloroethane | 1U | ug/1 | Ethane, 1,1,1,2-Tetrac+ | 1U | ug/1 | | | | |
| 1,1-Dichloroethene | 1U | ug/1 | cis-1,3-Dichloropropene | 1U | ug/1 | | | | |
| Trichlorofluoromethane | 1U | ug/1 | trans-1,3-Dichloropropene | 1U | ug/1 | | | | |
| Methane, Dichlorodiflu+ | 1U | ug/1 | P-Bromofluorobenzene | 106 | % Recov | | | | |
| 1,2-Dichloropropane | 1U | ug/1 | Surrog: 1-Bromo-2-Fluo+ | 104 | % Recov | | | | |
| 2-Butanone | 2UJ | ug/1 | D4-1,2-Dichlorobenzene | 100 | % Recov | | | | |
| 1,1,2-Trichloroethane | 1U | ug/1 | d8-Toluene | 102 | % Recov | | | | |
| Trichloroethene | 1U | ug/1 | d4-1,2-Dichloroethane | 97 | % Recov | | | | |
| ETHANE, 1,1,2,2-TETRAC+ | 1U | ug/1 | | | | | | | |
| 1,2,3-Trichlorobenzene | 1U | ug/1 | | | | | | | |
| Hexachlorobutadiene | 1U | ug/1 | | | | | | | |
| Naphthalene | 1UJ | ug/1 | | | | | | | |
| Benzene, 1,2-Dimethyl | 1U | ug/1 | | | | | | | |
| 2-Chlorotoluene | 1U | ug/1 | | | | | | | |
| 1,2-Dichlorobenzene | 1U | ug/1 | | | | | | | |
| 1,2,4-Trimethylbenzene | 1U | ug/1 | | | | | | | |
| 1,2-Dibromo-3-chloropropr | 1U | ug/1 | | | | | | | |
| 1,2,3-Trichloropropane | 1U | ug/1 | | | | | | | |
| Tert-Butylbenzene | 1U | ug/1 | | | | | | | |
| Isopropylbenzene (Cumene) | 1U | ug/1 | | | | | | | |
| P-Isopropyltoluene | 1U | ug/1 | | | | | | | |
| Ethylbenzene | 1U | ug/1 | | | | | | | |
| BENZENE, ETHENYL-(STYR+) | 1U | ug/1 | | | | | | | |
| BENZENE, PROPYL- | 1U | ug/1 | | | | | | | |
| Butylbenzenes | 1U | ug/1 | | | | | | | |
| 4-Chlorotoluene | 1U | ug/1 | | | | | | | |
| 1,4-Dichlorobenzene | 1U | ug/1 | | | | | | | |
| 1,2-Dibromoethane (EDB) | 1U | ug/1 | | | | | | | |
| 1,2-Dichloroethane | 1U | ug/1 | | | | | | | |
| 4-Methyl-2-Pentanone | 1U | ug/1 | | | | | | | |
| 1,3,5-Trimethylbenzene | 1U | ug/1 | | | | | | | |

(Sample Complete)

Project: DOE-003D LAKEWOOD/PLAZA CLEANERS

Officer: PZM Account: D3P11

Laboratory: Ecology, Manchester

Sample No: 91 208086 Description: MW-16A

Begin Date: 91/05/16 :

Source: Well (Test/Observation)

| | VOA - PP Scan (GCMS) | Water-Total | Result | Units | VOA - PP Scan (GCMS) | Water-Total | Result | Units | VOA - PP Scan (GCMS) | Water-Total | Result | Units |
|---------------------------|----------------------|-------------|---------------------------|-------|----------------------|---------------------------|--------|---------|-------------------------|---------------|---------|-------|
| | | | | | *** Continued | *** Continued | #1 | | *** Continued | *** Continued | Result | Units |
| Carbon Tetrachloride | 1U | ug/1 | Bromobenzene | 1U | ug/1 | Trichlorofluoromethane | 110 | % Recov | Methane, Dichlorodiflu+ | 106 | % Recov | |
| Acetone | 4UJ | ug/1 | Toluene | 1U | ug/1 | 1,2-Dichloropropane | 108 | % Recov | | | | |
| Chloroform | 1U | ug/1 | Chlorobenzene | 1U | ug/1 | 2-Butanone | 84 | % Recov | | | | |
| Benzene | 1U | ug/1 | 1,2,4-Trichlorobenzene | 1U | ug/1 | 1,1,2-Trichloroethane | 96 | % Recov | | | | |
| 1,1,1-Trichloroethane | 1U | ug/1 | Dibromochloromethane | 1U | ug/1 | Tetrachloroethene | 105 | % Recov | | | | |
| Chloromethane | 1UJ | ug/1 | Tetrachloroethene | 26 | * | Trichloroethene | 105 | % Recov | | | | |
| Dibromochloromethane | 1U | ug/1 | Sec-Butylbenzene | 1U | ug/1 | ETHANE, 1,1,2-TETRAC+ | 92 | % Recov | | | | |
| Bromoform | 1U | ug/1 | 1,3-Dichloropropane | 1U | ug/1 | 1,2,3-Trichlorobenzene | 102 | % Recov | | | | |
| Chloroethane | 1U | ug/1 | Cis-1,2-Dichloroethene | 2 | * | Hexachlorobutadiene | 96 | % Recov | | | | |
| Vinyl Chloride | 1U | ug/1 | trans-1,2-Dichloroethene+ | 1U | ug/1 | Naphthalene | 91 | % Recov | | | | |
| Methylene Chloride | 1U | ug/1 | 1,3-Dichlorobenzene | 1U | ug/1 | Benzene, 1,2-Dimethyl | 101 | % Recov | | | | |
| Carbon Disulfide | 1U | ug/1 | 1,1-Dichloropropane | 1U | ug/1 | 2-Chlorotoluene | 98 | % Recov | | | | |
| Bromoform | 1U | ug/1 | 2,2-Dichloropropane | 1U | ug/1 | 1,2-Dichlorobenzene | 101 | % Recov | | | | |
| Bromodichloromethane | 1U | ug/1 | 2-Hexanone | 1U | ug/1 | 1,2,4-Trimethylbenzene | 98 | % Recov | | | | |
| 1,1-Dichloroethane | 1U | ug/1 | Ethane, 1,1,2-TETRAC+ | 1U | ug/1 | 1,2-Dibromo-3-chloroprop+ | 81 | % Recov | | | | |
| 1,1-Dichloroethene | 1U | ug/1 | cis-1,3-Dichloropropene | 1U | ug/1 | 1,2,3-Trichloropropane | 88 | % Recov | | | | |
| Trichlorofluoromethane | 1U | ug/1 | trans-1,3-Dichloropropene | 1U | ug/1 | Tert-Butylbenzene | 96 | % Recov | | | | |
| Methane, Dichlorodiflu+ | 1U | ug/1 | p-Bromofluorobenzene | 100 | % Recov | Isopropylbenzene (Cumene) | 100 | % Recov | | | | |
| 1,2-Dichloropropane | 1U | ug/1 | Surrog: 1-Bromo-2-Fluo+ | 97 | % Recov | p-Isopropyltoluene | 93 | % Recov | | | | |
| 2-Butanone | 2UJ | ug/1 | D4-1,2-Dichlorobenzene | 96 | % Recov | Ethylenbenzene | 103 | % Recov | | | | |
| 1,1,2-Trichloroethane | 1U | ug/1 | d8-Toluene | 101 | % Recov | BENZENE, ETHENYL-(STYR+) | 98 | % Recov | | | | |
| Trichloroethene | 0.6J* | ug/1 | d4-1,2-Dichloroethane | 101 | % Recov | BENZENE, PROPYL- | 94 | % Recov | | | | |
| ETHANE, 1,1,2,2-TETRAC+ | 1U | ug/1 | Butylbenzene | 98 | % Recov | Butylbenzene | 98 | % Recov | | | | |
| 1,2,3-Trichlorobenzene | 1U | ug/1 | 4-Chlorotoluene | 103 | % Recov | | | | | | | |
| Hexachlorobutadiene | 1U | ug/1 | Naphthalene | 95 | % Recov | | | | | | | |
| Naphthalene | 1UJ | ug/1 | 1,2-Dimethyl | 92 | % Recov | | | | | | | |
| Benzene, 1,2-Dimethyl | 1U | ug/1 | 2-Chlorotoluene | 109 | % Recov | | | | | | | |
| 1,2-Dichlorobenzene | 1U | ug/1 | 1,2,4-Trimethylbenzene | 94 | % Recov | | | | | | | |
| 1,2,4-Trimethylbenzene | 1U | ug/1 | Carbon Tetrachloride | 106 | % Recov | 4-Methyl-2-Pentanone | 96 | % Recov | | | | |
| 1,2-Dibromo-3-chloroprop+ | 1U | ug/1 | * Acetone | 47 | % Recov | 1,3,5-Trimethylbenzene | 104 | % Recov | | | | |
| 1,2,3-Trichloropropane | 1U | ug/1 | Chloroform | 106 | % Recov | Bromobenzene | 104 | % Recov | | | | |
| Tert-Butylbenzene | 1U | ug/1 | Benzene | 105 | % Recov | Toluene | 98 | % Recov | | | | |
| Isopropylbenzene (Cumene) | 1U | ug/1 | 1,1,1-Trichloroethane | 115 | % Recov | Chlorobenzene | 103 | % Recov | | | | |
| p-Isopropyltoluene | 1U | ug/1 | Bromomethane | 117 | % Recov | 1,2,4-Trichlorobenzene | 97 | % Recov | | | | |
| Ethylenbenzene | 1U | ug/1 | Chloroethane | 103 | % Recov | Dibromochloromethane | 92 | % Recov | | | | |
| BENZENE, ETHENYL-(STYR+) | 1U | ug/1 | Dibromomethane | 105 | % Recov | Tetrachloroethene | 35 | % Recov | | | | |
| BENZENE, PROPYL- | 1U | ug/1 | Bromochloromethane | 90 | % Recov | Sec-Butylbenzene | 94 | % Recov | | | | |
| Butylbenzene | 1U | ug/1 | Chloroethane | 239 | % Recov | 1,3-Dichloropropane | 104 | % Recov | | | | |
| 4-Chlorotoluene | 1U | ug/1 | Vinyl Chloride | 94 | % Recov | Cis-1,2-Dichloroethene | 101 | % Recov | | | | |
| 1,4-Dichlorobenzene | 1U | ug/1 | Methylene Chloride | 103 | % Recov | trans-1,2-Dichloroethene | 106 | % Recov | | | | |
| 1,2-Dibromoethane (EDB) | 1U | ug/1 | Carbon Disulfide | 92 | % Recov | 1,3-Dichlorobenzene | 100 | % Recov | | | | |
| 1,2-Dichloroethane | 1U | ug/1 | Bromoform | 89 | % Recov | 1,1-Dichloropropane | 106 | % Recov | | | | |
| 1,2-Dichloroethane | 1U | ug/1 | Bromodichloromethane | 104 | % Recov | 2,2-Dichloropropane | 110 | % Recov | | | | |
| 1,2-Dichloroethane | 1U | ug/1 | 1,1-Dichloroethane | 103 | % Recov | 2-Hexanone | 87 | % Recov | | | | |
| 1,3,5-Trimethylbenzene | 1U | ug/1 | 1,1-Dichloroethane | 100 | % Recov | Ethane, 1,1,2-TETRAC+ | 108 | % Recov | | | | |

(Continued on next page)

29-JUL-91
13:14:04

Washington State Department of Ecology
Sample/Project Analysis Results

Project: DOE-003D LAKEWOOD/PLAZA CLEANERS

Laboratory: Ecology, Manchester
Officer: PZM Account: D3P11

Sample No: 91 208086 Description: MW-16A

Begin Date: 9/1/05/16 :

Source: Well (Test/Observation)

| | VOA - PP Scan (GCMS) | Water-Total | | VOA - PP Scan (GCMS) | Water-Total | |
|--------------------------|----------------------|-------------|-------|--------------------------|-------------|-------------|
| | Matrix Spike #1 | Result | Units | Matrix Spike #2 | Result | Units |
| D4-1,2-Dichlorobenzene | 100 | % Recov | | 1,2,3-Trichloropropane | 99 | % Recov |
| d8-Toluene | 101 | % Recov | | Tert-Butylbenzene | / | 108 % Recov |
| cis-1,3-Dichloropropene | 92 | % Recov | | Isopropylbenzene (Cume+) | 104 | % Recov |
| trans-1,3-Dichloroprop+ | 94 | % Recov | | Polyisopropyltoluene | 96 | % Recov |
| d4-1,2-Dichloroethane | 111 | % Recov | | Ethylbenzene | 106 | % Recov |
| p-Bromofluorobenzene | 104 | % Recov | | BENZENE, ETHENYL-(STYR+) | 102 | % Recov |
| Surrog: 1-Bromo-2-Fluo+ | 98 | % Recov | | BENZENE, PROPYL- | 103 | % Recov |
| | | | | Butylbenzene | 104 | % Recov |
| | | | | 4-Chlorotoluene | 102 | % Recov |
| | | | | 1,4-Dichlorobenzene | 99 | % Recov |
| | | | | 1,2-Dibromoethane (EDB) | 97 | % Recov |
| | | | | 1,2-Dichloroethane | 108 | % Recov |
| Carbon Tetrachloride | 113 | % Recov | | 4-Methyl-2-Pentanone | 96 | % Recov |
| Acetone | 26 | % Recov | | 1,3,5-Trimethylbenzene | 98 | % Recov |
| Chloroform | 102 | % Recov | | Bromobenzene | 100 | % Recov |
| Benzene | 104 | % Recov | | Toluene | 103 | % Recov |
| 1,1,1-Trichloroethane | 109 | % Recov | | Chlorobenzene | 102 | % Recov |
| Bromomethane | 126 | % Recov | | 1,2,4-Trichlorobenzene | 104 | % Recov |
| Chloromethane | 98 | % Recov | | Dibromochloromethane | 100 | % Recov |
| Dibromomethane | 101 | % Recov | | Tetrachloroethene | 30 | % Recov |
| Bromochloromethane | 98 | % Recov | | Sec-Butylbenzene | 96 | % Recov |
| Chloroerthane | 239 | % Recov | | 1,3-Dichloropropane | 104 | % Recov |
| Vinyl Chloride | 98 | % Recov | | Cis-1,2-Dichloroethene | 100 | % Recov |
| Methylene Chloride | 108 | % Recov | | trans-1,2-Dichloroethene | 100 | % Recov |
| Carbon Disulfide | 96 | % Recov | | 1,3-Dichlorobenzene | 108 | % Recov |
| Bromoform | 94 | % Recov | | 1,1-Dichloropropane | 109 | % Recov |
| Bromodichloromethane | 104 | % Recov | | 2,2-Dichloropropane | 114 | % Recov |
| 1,1-Dichloroethane | 102 | % Recov | | 2-Hexanone | 94 | % Recov |
| 1,1-Dichloroethene | 100 | % Recov | | Ethane, 1,1,2-TETRAC+ | 106 | % Recov |
| Trichlorofluoromethane | 111 | % Recov | | D4-1,2-Dichlorobenzene | 106 | % Recov |
| Methane, Dichlorodiflu+ | 111 | % Recov | | d8-Toluene | 101 | % Recov |
| 1,2-Dichloropropane | 106 | % Recov | | 2,2-Dichloropropane | 96 | % Recov |
| 2-Butanone | 82 | % Recov | | trans-1,3-Dichloroprop+ | 102 | % Recov |
| 1,1,2-Trichloroethane | 99 | % Recov | | d4-1,2-Dichloroethane | 109 | % Recov |
| Trichloroethene | 106 | % Recov | | p-Bromofluorobenzene | 103 | % Recov |
| ETHANE, 1,1,2,2-TETRAC+ | 96 | % Recov | | Surrog: 1-Bromo-2-Fluo+ | 96 | % Recov |
| 1,2,3-Trichlorobenzene | 114 | % Recov | | | | |
| Hexachlorobutadiene | 106 | % Recov | | | | |
| Naphthalene | 100 | % Recov | | | | |
| Benzene, 1,2-Dimethyl | 107 | % Recov | | | | |
| 2-Chlorotoluene | 98 | % Recov | | | | |
| 1,2-Dichlorobenzene | 100 | % Recov | | | | |
| 1,2,4-Trimethylbenzene | 99 | % Recov | | | | |
| 1,2-Dibromo-3-chloropro+ | 90 | % Recov | | | | |

(Sample Complete)

29-JUL-91
13:14:04

Washington State Department of Ecology
Sample/Project Analysis Results

Project: DOE-003D LAKEWOOD/PLAZA CLEANERS

Laboratory: Ecology, Manchester

Sample No: 91 208087 Description: MW-16B

Begin Date: 91/05/16 :

| | VOA - PP Scan (GCMS) | Water-Total | VOA - PP Scan (GCMS) | Water-Total | Result *** | Continued *** | Result | Units |
|----------------------------|----------------------|-------------|---------------------------|-------------|------------|---------------|--------|-------|
| Carbon Tetrachloride | 1U ug/1 | | Bromobenzene | 1U ug/1 | | | | |
| Acetone | 3UJ ug/1 | | Toluene | / | | | | |
| Chloroform | 1U ug/1 | | Chlorobenzene | 1U ug/1 | | | | |
| Benzene | 1U ug/1 | | 1,2,4-Trichlorobenzene | 1U ug/1 | | | | |
| 1,1,1-Trichloroethane | 1U ug/1 | | DibromoChloromethane | 1U ug/1 | | | | |
| Chloromethane | 1U ug/1 | | Tetrachloroethene | 28 ug/1 | * | | | |
| Dibromomethane | 1U ug/1 | | Sec-Butylbenzene | 1U ug/1 | | | | |
| BromoChloromethane | 1U ug/1 | | 1,3-Dichloropropane | 1U ug/1 | | | | |
| Chloroethane | 1U ug/1 | | Cis-1,2-Dichloroethene | 3 ug/1 | * | | | |
| Vinyl Chloride | 1U ug/1 | | trans-1,2-Dichloroethene+ | 1U ug/1 | | | | |
| Methylene Chloride | 1U ug/1 | | 1,3-Dichlorobenzene | 1U ug/1 | | | | |
| Carbon Disulfide | 1U ug/1 | | 1,1-Dichloropropane | 1U ug/1 | | | | |
| Bromoform | 1U ug/1 | | 2,2-Dichloropropane | 1U ug/1 | | | | |
| Bromodichloromethane | 1U ug/1 | | 2-Hexanone | 1U ug/1 | | | | |
| 1,1-Dichloroethane | 1U ug/1 | | Ethane, 1,1,1,2-Tetrac- | 1U ug/1 | | | | |
| 1,1-Dichloroethene | 1U ug/1 | | cis-1,3-Dichloropropene | 1U ug/1 | | | | |
| Trichlorofluoromethane | 1U ug/1 | | trans-1,3-Dichloroprop- | 1U ug/1 | | | | |
| Methane, Dichlorodiflu+ | 1U ug/1 | | p-Bromofluorobenzene | 98 % | Recov | | | |
| 1,2-Dichloropropane | 1U ug/1 | | Surrog: 1-Bromo-2-Fluo+ | 97 % | Recov | | | |
| 2-Butanone | 2UJ ug/1 | | D4-1,2-Dichlorobenzene | 100 % | Recov | | | |
| 1,1,2-Trichloroethane | 1U ug/1 | | d8-Toluene | 101 % | Recov | | | |
| Trichloroethene | 0.6J* | | d4-1,2-Dichloroethane | 106 % | Recov | | | |
| ETHANE, 1,1,2,2-TETRA C+ | 1U ug/1 | | | | | | | |
| 1,2,3-Trichlorobenzene | 1U ug/1 | | | | | | | |
| Hexachlorobutadiene | 1U ug/1 | | | | | | | |
| Naphthalene | 1U ug/1 | | | | | | | |
| Benzene, 1,2-Dimethyl | 1U ug/1 | | | | | | | |
| 2-Chlorotoluene | 1U ug/1 | | | | | | | |
| 1,2-Dichlorobenzene | 1U ug/1 | | | | | | | |
| 1,2,4-Trimethylbenzene | 1U ug/1 | | | | | | | |
| 1,2-Dibromo-3-chloropr+ | 1U ug/1 | | | | | | | |
| 1,2,3-Trichloropropane | 1U ug/1 | | | | | | | |
| Tert-Butylbenzene | 1U ug/1 | | | | | | | |
| Isopropylbenzene (Cumene+) | 1U ug/1 | | | | | | | |
| p-Isopropyltoluene | 1U ug/1 | | | | | | | |
| Ethylbenzene | 1U ug/1 | | | | | | | |
| BENZENE, ETHENYL-(STYR+) | 1U ug/1 | | | | | | | |
| BENZENE, PROPYL- | 1U ug/1 | | | | | | | |
| Butylbenzenes | 1U ug/1 | | | | | | | |
| 4-Chlorotoluene | 1U ug/1 | | | | | | | |
| 1,4-Dichlorobenzene | 1U ug/1 | | | | | | | |
| 1,2-Dibromoethane (EDB) | 1U ug/1 | | | | | | | |
| 1,2-Dichloroethane | 1U ug/1 | | | | | | | |
| 4-Methyl-2-Pentanone | 1U ug/1 | | | | | | | |
| 1,3,5-Trimethylbenzene | 1U ug/1 | | | | | | | |

(Sample Complete)

Officer: PZM Account: D3P11

Source: Well (Test/Observation)

24-JUL-14
13:14:04

Washington State Department of Ecology
Sample/Project Analysis Results

Project: DOE-003D LAKWOOD/PLAZA CLEANERS

Laboratory: Ecology, Manchester

Sample No: 91 208088

Description: MW-20B

Begin Date: 91/05/16 :

| | VOA - PP Scan (GCMS) | Water-Total | Result | Units | VOA - PP Scan (GCMS) | Water-Total | Result | Units |
|---------------------------|----------------------|-------------|---------------------------|-------|----------------------|-------------|--------|-------|
| Carbon Tetrachloride | 1U | ug/1 | Bromobenzene | 1U | ug/1 | 1U | ug/1 | |
| Acetone | 3UJ | ug/1 | Toluene | , | | 1U | ug/1 | |
| Chloroform | 1U | ug/1 | Chlorobenzene | , | | 1U | ug/1 | |
| Benzene | 1U | ug/1 | 1,2,4-Trichlorobenzene | 1U | ug/1 | 1U | ug/1 | |
| 1,1,1-Trichloroethane | 1UJ | ug/1 | Dibromochloromethane | 1U | ug/1 | 1U | ug/1 | |
| Chloromethane | 1UJ | ug/1 | Tetrachloroethene | 0.4J* | ug/1 | | | |
| Dibromoethane | 1U | ug/1 | Sec-Butylbenzene | 1U | ug/1 | | | |
| Bromochloromethane | 1U | ug/1 | 1,3-Dichloropropane | 1U | ug/1 | | | |
| Chloroethane | 1U | ug/1 | Cis-1,2-Dichloroethene | 1U | ug/1 | | | |
| Vinyl Chloride | 1U | ug/1 | Trans-1,2-Dichloroethene | 1U | ug/1 | | | |
| Methylene Chloride | 1U | ug/1 | 1,3-Dichlorobenzene | 1U | ug/1 | | | |
| Carbon Disulfide | 1U | ug/1 | 1,1-Dichloropropene | 1U | ug/1 | | | |
| Bromoform | 1U | ug/1 | 2,2-Dichloropropane | 1U | ug/1 | | | |
| Bromodichloromethane | 1U | ug/1 | 2-Hexanone | 1U | ug/1 | | | |
| 1,1-Dichloroethane | 1U | ug/1 | Ethane, 1,1,1,2-Tetrac+ | 1U | ug/1 | | | |
| 1,1-Dichlorofluoromethane | 1U | ug/1 | cis-1,3-Dichloropropene | 1U | ug/1 | | | |
| Trichlorofluoromethane | 1U | ug/1 | trans-1,3-Dichloropropene | 1U | ug/1 | | | |
| Methane, Dichlorodiflu+ | 1U | ug/1 | P-Bromofluorobenzene | 99 | % Recov | | | |
| 1,2-Dichloropropane | 1U | ug/1 | Surrog: 1-Bromo-2-Fluo+ | 101 | % Recov | | | |
| 2-Butanone | 2UJ | ug/1 | D4-1,2-Dichlorobenzene | 97 | % Recov | | | |
| 1,1,2-Trichloroethane | 1U | ug/1 | d8-Toluene | 96 | % Recov | | | |
| Trichloroethene | 1U | ug/1 | d4-1,2-Dichloroethane | 104 | % Recov | | | |
| ETHANE, 1,1,2,2-TETRAC+ | 1U | ug/1 | | | | | | |
| 1,2,3-Trichlorobenzene | 1U | ug/1 | | | | | | |
| Hexachlorobutadiene | 1U | ug/1 | | | | | | |
| Naphthalene | 1UJ | ug/1 | | | | | | |
| Benzene, 1,2-Dimethyl | 1U | ug/1 | | | | | | |
| 2-Chlorotoluene | 1U | ug/1 | | | | | | |
| 1,2-Dichlorobenzene | 1U | ug/1 | | | | | | |
| 1,2,4-Trimethylbenzene | 1U | ug/1 | | | | | | |
| 1,2-Dibromo-3-chloropropr | 1U | ug/1 | | | | | | |
| 1,2,3-Trichloropropane | 1U | ug/1 | | | | | | |
| Tert-Butylbenzene | 1U | ug/1 | | | | | | |
| Isopropylbenzene (Cume+) | 1U | ug/1 | | | | | | |
| P-Isopropyltoluene | 1U | ug/1 | | | | | | |
| Ethylbenzene | 1U | ug/1 | | | | | | |
| BENZENE, ETHENYL-(STYR+) | 1U | ug/1 | | | | | | |
| BENZENE, PROPYL- | 1U | ug/1 | | | | | | |
| Butylbenzene | 1U | ug/1 | | | | | | |
| 4-Chlorotoluene | 1U | ug/1 | | | | | | |
| 1,4-Dichlorobenzene | 1U | ug/1 | | | | | | |
| 1,2-Dibromoethane (EDB) | 1U | ug/1 | | | | | | |
| 1,2-Dichloroethane | 1U | ug/1 | | | | | | |
| 4-Methyl-2-Pentanone | 1U | ug/1 | | | | | | |
| 1,3,5-Trimethylbenzene | 1U | ug/1 | | | | | | |

(Sample Complete)

Officer: PZM Account: D3P11

Source: Well 1 (Test/Observation)

Project: DOE-003D LAKEWOOD/PLAZA CLEANERS

Laboratory: Ecology, Manchester

Sample No: 91 208089

Description: MW-20A

Begin Date: 9/1/05/16 :

| | VOA - PP Scan (GCMS) | Water-Total | VOA - PP Scan (GCMS) | Water-Total | Result | Units | Result | Units | |
|---------------------------|----------------------|-------------|---------------------------|------------------------|---------|---------|--------|-------|------|
| | Result | Units | Result | *** Continued *** | | | | | |
| Carbon Tetrachloride | 1U | ug/1 | Bromobenzene | / | 1U | ug/1 | 1U | ug/1 | |
| Acetone | 3UJ | ug/1 | Toluene | / | 1U | ug/1 | 1U | ug/1 | |
| Chloroform | 0.2J* | ug/1 | Chlorobenzene | 1,2,4-Trichlorobenzene | 1U | ug/1 | 1U | ug/1 | |
| Benzene | 0.3J* | ug/1 | 1UJ | 1,2-Dibromoethane | 1U | ug/1 | 1U | ug/1 | |
| 1,1,1-Trichloroethane | 1UJ | ug/1 | Tetrachloroethane | 752* | ug/1 | ug/1 | 752* | ug/1 | |
| Chloromethane | 1U | ug/1 | Sec-Butylbenzene | 1U | ug/1 | ug/1 | 1U | ug/1 | |
| Bromoethylmethane | 1U | ug/1 | 1,3-Dichloropropane | 1U | ug/1 | ug/1 | 1U | ug/1 | |
| Bromoform | 1U | ug/1 | Cis-1,2-Dichloroethene | 30* | ug/1 | ug/1 | 0.5J* | ug/1 | |
| Bromodichloromethane | 1U | ug/1 | trans-1,2-Dichloroethene | 1U | ug/1 | ug/1 | 1U | ug/1 | |
| Vinyl Chloride | 1U | ug/1 | 1,3-Dichlorobenzene | 1U | ug/1 | ug/1 | 1U | ug/1 | |
| Methylene Chloride | 1U | ug/1 | 1,1-Dichloropropane | 1U | ug/1 | ug/1 | 1U | ug/1 | |
| Carbon Disulfide | 1U | ug/1 | 2,2-Dichloropropane | 1U | ug/1 | ug/1 | 1U | ug/1 | |
| Chloroethane | 1U | ug/1 | 2-Hexanone | 1U | ug/1 | ug/1 | 1U | ug/1 | |
| 1,1-Dichloroethane | 1U | ug/1 | Ethane, 1,1,1,2-Tetrac+ | 1U | ug/1 | ug/1 | 1U | ug/1 | |
| 1,1-Dichlorofluoromethane | 1U | ug/1 | cis-1,3-Dichloropropene | 1U | ug/1 | ug/1 | 1U | ug/1 | |
| Trichlorofluoromethane | 1U | ug/1 | trans-1,3-Dichloropropene | 1U | ug/1 | ug/1 | 1U | ug/1 | |
| Methane, Dichlorodiflu+ | 1U | ug/1 | p-Bromofluorobenzene | 103 | % Recov | | 1U | ug/1 | |
| 1,2-Dichloropropane | 1U | ug/1 | Surrog: 1-Bromo-2-Fluo+ | 94 | % Recov | | 1U | ug/1 | |
| 2-Butanone | 2UJ | ug/1 | D4-1,2-Dichlorobenzene | 102 | % Recov | | 1U | ug/1 | |
| 1,1,2-Trichloroethane | 1U | ug/1 | d8-Toluene | 103 | % Recov | | 1U | ug/1 | |
| Trichloroethene | 16* | ug/1 | 1U | ug/1 | 102 | % Recov | | 1U | ug/1 |
| ETHANE, 1,1,2,2-TETRAC+ | 1U | ug/1 | 1,2,3-Trichlorobutadiene | | | | | | |
| Hexachlorobutadiene | 1U | ug/1 | Naphthalene | 1UJ | ug/1 | | | | |
| Naphthalene | 1U | ug/1 | Benzene, 1,2-Dimethyl- | | | | | | |
| Benzene, 1,2-Dimethyl- | 1U | ug/1 | 2-Chlorotoluene | | | | | | |
| 2-Chlorotoluene | 1U | ug/1 | 1,2-Dichlorobenzene | | | | | | |
| 1,2,4-Trimethylbenzene | 1U | ug/1 | 1,2-Dibromo-3-chloropr+ | | | | | | |
| 1,2,3-Trichloropropane | 1U | ug/1 | 1,2,3-Trichloropropane | | | | | | |
| Tert-Butylbenzene | 1U | ug/1 | Tert-Butylbenzene | | | | | | |
| Isopropylbenzene (Cumene) | 1U | ug/1 | Isopropylbenzene | | | | | | |
| P-Isopropyltoluene | 1U | ug/1 | P-Isopropyltoluene | | | | | | |
| Ethylenbenzene | 1U | ug/1 | Ethylenbenzene | | | | | | |
| BENZENE, ETHENYL-(STYR + | 1U | ug/1 | BENZENE, PROPYL- | | | | | | |
| Butylbenzene | 1U | ug/1 | 4-Chlorotoluene | | | | | | |
| 4-Chlorotoluene | 1U | ug/1 | 1,4-Dichlorobenzene | | | | | | |
| 1,2-Dibromoethane (EDB) | 1U | ug/1 | 1,2-Dibromoethane | | | | | | |
| 1,2-Dichloroethane | 1U | ug/1 | 1,2-Dichloroethane | | | | | | |
| 4-Methyl-2-Pentanone | 1U | ug/1 | 4-Methyl-2-Pentanone | | | | | | |
| 1,3,5-Trimethylbenzene | 1U | ug/1 | 1,3,5-Trimethylbenzene | | | | | | |

(Sample Complete)

Source: Well (Test / Observation)

Officer: PZM

Account: D3P11

Sample / Project Analysis Results

Project: DOE-003D LAKEWOOD/PLAZA CLEANERS

Officer: PZM Account: D3P11

Laboratory: Ecology, Manchester

Sample No: 91 208090

Description: TRANSFER

Begin Date: 91/05/16 :

Source: Water (General)

| | VOA - PP Scan (GCMS) | Water-Total | Result | Units | VOA - PP Scan (GCMS) | Water-Total | Result | Units |
|---------------------------|----------------------|-------------|---------------------------|-------|----------------------|---------------------------|--------|---------|
| Carbon Tetrachloride | 1U | ug/1 | Bromobenzene | 1U | ug/1 | Chlorobenzene | 1U | ug/1 |
| Acetone | 3UJ | ug/1 | Toluene | 1U | ug/1 | 1,2,4-Trichlorobenzene | 1U | ug/1 |
| Chloroform | 1U | ug/1 | Dibromoethane | 1U | ug/1 | Dibromochloromethane | 1U | ug/1 |
| Benzene | 1U | ug/1 | Tetrachloroethene | 1U | ug/1 | Sec-Butylbenzene | 1U | ug/1 |
| 1,1,1-Trichloroethane | 1U | ug/1 | 1,3-Dichloropropane | 1U | ug/1 | Cis-1,2-Dichloroethene | 1U | ug/1 |
| Chloromethane | 1UJ | ug/1 | trans-1,2-Dichloroethene | 1U | ug/1 | trans-1,2-Dichloroethene+ | 1U | ug/1 |
| Dibromomethane | 1U | ug/1 | 1,3-Dichlorobenzene | 1U | ug/1 | 1,3-Dichlorobenzene | 1U | ug/1 |
| Bromoform | 1U | ug/1 | 1,1-Dichloropropane | 1U | ug/1 | 2,2-Dichloropropane | 1U | ug/1 |
| Bromodichloromethane | 1U | ug/1 | 2-Hexanone | 1U | ug/1 | Ethane, 1,1,1,2-Tetrac+ | 1U | ug/1 |
| 1,1-Dichloroethane | 1U | ug/1 | cis-1,3-Dichloropropene | 1U | ug/1 | cis-1,3-Dichloropropene | 1U | ug/1 |
| 1,1-Dichloroethene | 1U | ug/1 | trans-1,3-Dichloropropene | 1U | ug/1 | trans-1,3-Dichloropropene | 1U | ug/1 |
| Trichlorofluoromethane | 1U | ug/1 | P-Bromofluorobenzene | 98 | % Recov | Surrogat 1-Bromo-2-Fluo+ | 98 | % Recov |
| Methane, Dichlorodiflu+ | 1U | ug/1 | Surrogat 1-Bromo-2-Fluo+ | 101 | % Recov | D4-1,2-Dichlorobenzene | 101 | % Recov |
| 1,2-Dichloropropane | 1U | ug/1 | d8-Toluene | 102 | % Recov | d4-1,2-Dichloroethane | 104 | % Recov |
| 2-Butanone | 2UJ | ug/1 | | | | | | |
| 1,1,2-Trichloroethane | 1U | ug/1 | | | | | | |
| Trichloroethylene | 1U | ug/1 | | | | | | |
| ETHANE, 1,1,2,2-TETRAC+ | 1U | ug/1 | | | | | | |
| 1,2,3-Trichlorobenzene | 1U | ug/1 | | | | | | |
| Hexachlorobutadiene | 1U | ug/1 | | | | | | |
| Naphthalene | 1UJ | ug/1 | | | | | | |
| Benzene, 1,2-Dimethyl | 1U | ug/1 | | | | | | |
| 2-Chlorotoluene | 1U | ug/1 | | | | | | |
| 1,2-Dichlorobenzene | 1U | ug/1 | | | | | | |
| 1,2,4-Trimethylbenzene | 1U | ug/1 | | | | | | |
| 1,2-Dibromo-3-Chloropro+ | 1U | ug/1 | | | | | | |
| 1,2,3-Trichloropropane | 1U | ug/1 | | | | | | |
| Tert-Butylbenzene | 1U | ug/1 | | | | | | |
| Isopropylbenzene (Cumene) | 1U | ug/1 | | | | | | |
| p-Isopropyltoluene | 1U | ug/1 | | | | | | |
| Ethylbenzene | 1U | ug/1 | | | | | | |
| BENZENE, ETHENYL-(STYR+ | 1U | ug/1 | | | | | | |
| BENZENE, PROPYL- | 1U | ug/1 | | | | | | |
| Butylbenzene | 1U | ug/1 | | | | | | |
| 4-Chlorotoluene | 1U | ug/1 | | | | | | |
| 1,4-Dichlorobenzene | 1U | ug/1 | | | | | | |
| 1,2-Dibromoethane (EDB) | 1U | ug/1 | | | | | | |
| 1,2-Dichloroethane | 1U | ug/1 | | | | | | |
| 4-Methyl-2-Pentanone | 1U | ug/1 | | | | | | |
| 1,3,5-Trimethylbenzene | 1U | ug/1 | | | | | | |

(Sample Complete)

Project: DOE-003D LAKEWOOD/PLAZA CLEANERS

Laboratory: Ecology, Manchester

Sample No: 91 208091

Description: TRANSPORT

Begin Date: 91/05/16 :

| | VOA - PP Scan (GCMS) | Water-Total | VOA - PP Scan (GCMS) | Water-Total | Result *** | Continued *** | Result | Units |
|---|----------------------|-------------|------------------------------|-------------|------------|---------------|--------|-------|
| | Result | Units | Result | Units | | | | |
| Carbon Tetrachloride | 1U | ug/1 | Bromobenzene | 1U | ug/1 | | | |
| Acetone | 3UJ | ug/1 | Toluene | 1U | ug/1 | | | |
| Chloroform | 1U | ug/1 | Chlorobenzene | 1U | ug/1 | | | |
| Benzene | 1U | ug/1 | 1,2,4-Trichlorobenzene | 1U | ug/1 | | | |
| 1,1,1-Trichloroethane | 1U | ug/1 | Dibromo-chloromethane | 1U | ug/1 | | | |
| Chloromethane | 1UJ | ug/1 | Tetrachloroethene | 1U | ug/1 | | | |
| Dibromochloromethane | 1U | ug/1 | Sec-Butylbenzene | 1U | ug/1 | | | |
| Bromochloromethane | 1U | ug/1 | 1,3-Dichloropropane | 1U | ug/1 | | | |
| Chloroethane | 1U | ug/1 | Cis-1,2-Dichloroethene | 1U | ug/1 | | | |
| Vinyl Chloride | 1U | ug/1 | trans-1,2-Dichloroethene+ | 1U | ug/1 | | | |
| Methylene Chloride | 1U | ug/1 | 1,3-Dichlorobenzene | 1U | ug/1 | | | |
| Carbon Disulfide | 1U | ug/1 | 1,1-Dichloropropane | 1U | ug/1 | | | |
| Bromoform | 1U | ug/1 | 2,2-Dichloropropane | 1U | ug/1 | | | |
| Bromodichloromethane | 1U | ug/1 | 2-Hexanone | 1U | ug/1 | | | |
| 1,1-Dichloroethane | 1U | ug/1 | Ethane, 1,1,1,2-Tetrachloro- | 1U | ug/1 | | | |
| 1,1-Dichloroethene | 1U | ug/1 | cis-1,3-Dichloropropene | 1U | ug/1 | | | |
| Trichlorofluoromethane | 1U | ug/1 | trans-1,3-Dichloropropene | 1U | ug/1 | | | |
| Methane, Dichlorodifluoromethane, Dichlorodifluoromethane | 1U | ug/1 | p-Bromofluorobenzene | 99 | % Recov | | | |
| Methane, Dichlorodifluoromethane | 1U | ug/1 | Surrog: 1-Bromo-2-Fluo- | 96 | % Recov | | | |
| 1,2-Dichloropropane | 1U | ug/1 | D4-1,2-Dichlorobenzene | 100 | % Recov | | | |
| 2-Butanone | 1UJ | ug/1 | d8-Toluene | 102 | % Recov | | | |
| 1,1,2-Trichloroethane | 1U | ug/1 | d4-1,2-Dichloroethane | 103 | % Recov | | | |
| Trichloroethene | 1U | ug/1 | | | | | | |
| ETHANE, 1,1,2,2-TETRACHLOROETHANE | 1U | ug/1 | | | | | | |
| 1,2,3-Trichlorobenzene | 1U | ug/1 | | | | | | |
| Hexachlorobutadiene | 1U | ug/1 | | | | | | |
| Naphthalene | 1UJ | ug/1 | | | | | | |
| Benzene, 1,2-Dimethylbenzene | 1U | ug/1 | | | | | | |
| 2-Chlorotoluene | 1U | ug/1 | | | | | | |
| 1,2-Dichlorobenzene | 1U | ug/1 | | | | | | |
| 1,2,4-Trimethylbenzene | 1U | ug/1 | | | | | | |
| 1,2-Dibromo-3-chloropropane | 1U | ug/1 | | | | | | |
| 1,2,3-Trichloropropane | 1U | ug/1 | | | | | | |
| Tert-Butylbenzene | 1U | ug/1 | | | | | | |
| Isopropylbenzene (Cumene) | 1U | ug/1 | | | | | | |
| p-Isopropyltoluene | 1U | ug/1 | | | | | | |
| Ethylbenzene | 1U | ug/1 | | | | | | |
| BENZENE, ETHENYL-(STYR+ BENZENE, PROPYLBENZENE) | 1U | ug/1 | | | | | | |
| 4-Chlorotoluene | 1U | ug/1 | | | | | | |
| 1,4-Dichlorobenzene | 1U | ug/1 | | | | | | |
| 1,2-Dibromoethane (EDB) | 1U | ug/1 | | | | | | |
| 1,2-Dichloroethane | 1U | ug/1 | | | | | | |
| 4-Methyl-2-Pentanone | 1U | ug/1 | | | | | | |
| 1,3,5-Trimethylbenzene | 1U | ug/1 | | | | | | |

(Sample Complete)

Officer: PZM

Account: D3P11

Source: Water (General)

Project: DOE-003D LAKEWOOD/PLAZA CLEANERS

Laboratory: Ecology, Manchester

Sample No: 91 208092 Description: MW-19A

Begin Date: 91/05/15 :

Source: Well (Test/Observation)

Officer: PZM

Account: D3P11

| | Gen Inorg/Phys-Speci | Water-Totals | Water-Filters | Water-Filters |
|----------------------|----------------------|--------------|---------------|----------------------------|
| | Result | Units | Result | Units |
| Alk-HCO3 | CaCO3 | 77.8 * | mg/l | ICP Scan *** Continued *** |
| Alk-CO3 | CaCO3 | 1.0 | mg/l | |
| Hard-Tot | CaCO3 | 89.9 * | mg/l | |
| Solids - Specified | | | | |
| | Water-Totals | | | |
| | Result | Units | | |
| Solids | T-Dissol | 138H* | mg/l | |
| Nutrients - Specific | | | | |
| | Water-Totals | | | |
| | Result | Units | | |
| NO2NO3-N Total | | 1.45 * | mg/l | |
| Metals - Specified | | | | |
| | Water-Filters | | | |
| | Result | Units | | |
| Mercury Hg-Diss | | 0.05J* | ug/l | |
| Metals - Specified | | | | |
| Matrix Spike #1 | | | | |
| Mercury Hg-Diss | | 9.6 | % Recov | |
| Metals - Specified | | | | |
| Matrix Spike #2 | | | | |
| Mercury Hg-Diss | | 81 | % Recov | |
| Metals - ICP Scan | | | | |
| | Water-Filters | | | |
| | Result | Units | | |
| Calcium Ca-Diss | | 18.5 * | mg/l | |
| Magnesium Mg-Diss | | 8.62 * | mg/l | |
| Sodium Na-Diss | | 6.26E* | mg/l | |
| Arsenic As-Diss | | 30UJ | ug/l | |
| Barium Ba-Diss | | 1.7P* | ug/l | |
| Cadmium Cd-Diss | | 2.0U | ug/l | |
| Chromium Cr-Diss | | 5.0U | ug/l | |

(Sample Complete)

Project: DOE-003D LAKEWOOD/PLAZA CLEANERS

Officer: PZM Account: D3P11

Laboratory: Ecology, Manchester

Sample No: 91 208093

Description: MW-32

Begin Date: 91/05/15 :

| Gen Inorg/Phys-Speci | | Water-Total Result Units | | Metals - ICP Scan Matrix Spike #1 | | Water-Filtere Result Units | | Metals - ICP Scan Water-Filtre Continued *** | | Water-Filtre Result Units | |
|----------------------|---------|-------------------------------|------|--------------------------------------|---------|-------------------------------|---------|--|----------|------------------------------|---------|
| | | | | | | | | | | | |
| Alk-HCO3 | CaCO3 | 74.3 * | mg/1 | Calcium | Ca-Diss | 107 | % Recov | Cadmium | Cd-Diss | 2.00 | ug/1 |
| Alk-CO3 | CaCO3 | 1.0 | mg/1 | Magnesium | Mg-Diss | 114 | % Recov | Chromium | Cr-Diss | 5.00 | ug/1 |
| Hard-Tot | CaCO3 | 86.4 * | mg/1 | Arsenic | As-Diss | / | NA | Copper | Cu-Diss | 3.00 | ug/1 |
| Solids - Specified | | | | Barium | Ba-Diss | 115 | % Recov | Iron | Fe-Diss | 4.3P* | ug/1 |
| Solids T-Dissol | | 219H* mg/1 | | Cadmium | Cd-Diss | 110 | % Recov | Lead | Pb-Diss | 20UJ | ug/1 |
| Nutrients - Specific | | | | Chromium | Cr-Diss | 100 | % Recov | Manganese | Mn-Diss | 1.00 | ug/1 |
| NO2NO3-N Total | | 2.13 * | mg/1 | Copper | Cu-Diss | 98 | % Recov | Nickel | Ni-Diss | 10U | ug/1 |
| Mercury Hg-Diss | | 0.04U | ug/1 | Iron | Fe-Diss | 103 | % Recov | Silver | Ag-Diss | 3.0U | ug/1 |
| | | | | Lead | Pb-Diss | 80 | % Recov | Zinc | Zn-Diss | 6.5P* | ug/1 |
| | | | | Manganese | Mn-Diss | NOTSPIKED | % Recov | Selenium | Se-Diss | 50UJ | ug/1 |
| | | | | Nickel | Ni-Diss | 100 | % Recov | | | | |
| | | | | Silver | Ag-Diss | 99 | % Recov | | | | |
| | | | | Zinc | Zn-Diss | 99 | % Recov | | | | |
| | | | | Selenium | Se-Diss | NA | % Recov | | | | |
| | | | | | | | | Chloride | Total | 7.2 * | mg/1 |
| | | | | | | | | Sulfate | Total | 11.3 * | mg/1 |
| | | | | | | | | | | | |
| Metals - ICP Scan | | Water-Filtere Result Units | | Metals - ICP Scan Matrix Spike #2 | | Water-Filtere Result Units | | Metals - ICP Scan Water-Filtre Continued *** | | Water-Filtre Result Units | |
| Magnesium | Mg-Diss | 7.97 * | mg/1 | Calcium | Ca-Diss | 67 | % Recov | Chromium | Cr-Diss | 75 | % Recov |
| Sodium | Na-Diss | 6.62E* | mg/1 | Sodium | Na-Diss | NA | % Recov | Iron | Fe-Diss | 115 | % Recov |
| Arsenic | As-Diss | 3.0UJ | ug/1 | Arsenic | As-Diss | BA-Diss | % Recov | Lead | Pb-Diss | 102 | % Recov |
| Barium | Ba-Diss | 1.6P* | ug/1 | Cadmium | Cd-Diss | 98 | % Recov | Manganese | Mn-Diss | 98 | % Recov |
| Cadmium | Cd-Diss | 2.0U | ug/1 | Chromium | Cr-Diss | Copper | Cu-Diss | Nickel | Ni-Diss | 100 | % Recov |
| Chromium | Cr-Diss | 5.0U | ug/1 | | | Iron | Fe-Diss | Silver | Ag-Diss | 66 | % Recov |
| Copper | Cu-Diss | 3.0U | ug/1 | | | Lead | Pb-Diss | Zinc | Zn-Diss | 70 | % Recov |
| Iron | Fe-Diss | 2.0UJ | ug/1 | | | Manganese | Mn-Diss | NOTSPIKED | Selenium | 98 | % Recov |
| Lead | Pb-Diss | 1.0U | ug/1 | | | Nickel | Ni-Diss | Ag-Diss | Se-Diss | 98 | % Recov |
| Manganese | Mn-Diss | 1.0U | ug/1 | | | Silver | Sodium | Zinc | NA | 100 | % Recov |
| Nickel | Ni-Diss | 1.0U | ug/1 | | | Zinc | NA | Selenium | Se-Diss | NA | % Recov |
| Silver | Ag-Diss | 3.0U | ug/1 | | | | | | | | |
| Zinc | Zn-Diss | 8.8J* | ug/1 | | | | | | | | |
| Selenium | Se-Diss | 50UJ | ug/1 | | | | | | | | |
| | | | | | | | | | | | |
| Metals - ICP Scan | | Water-Filtere Result Units | | Metals - ICP Scan Matrix Spike #1 | | Water-Filtere Result Units | | Metals - ICP Scan Water-Filtre Continued *** | | Water-Filtre Result Units | |
| Calcium | Ca-Diss | 19.7 * | mg/1 | Calcium | Ca-Diss | 19.4 * | mg/1 | Magnesium | Mg-Diss | 7.87 * | mg/1 |
| | | | | | | | | Sodium | Na-Diss | 6.46E* | mg/1 |
| | | | | | | | | Arsenic | As-Diss | 30UJ | ug/1 |
| | | | | | | | | Barium | Ba-Diss | 1.5P* | ug/1 |

(Sample Complete)

Source: Well (Test/Observation)

13:14:04
2000-04-24

Massachusetts State Department of Environmental Quality
Sample/Project Analysis Results

Project: DOE-003D LAKEWOOD/PLAZA CLEANERS

Laboratory: Ecology, Manchester

Sample No: 91 208094

Description: MW-16A

Begin Date: 91/05/16 :

| Gen Inorg/Phys-Speci | Water-Total Result Units | Ion Chromatography Result Units | Water-Total Result Units |
|----------------------|-----------------------------|------------------------------------|-----------------------------|
| Alk-HCO ₃ | 82.0 * mg/l | Chloride | 6.9 * mg/l |
| Alk-CO ₃ | 1.0 mg/l | Sulfate | 14.0 * mg/l |
| Hard-Tot | 95.9 * mg/l | Total | / |

| Solids - Specified | Water-Total Result Units | Water-Filtere Result Units | Water-Filtere Result Units |
|--|-----------------------------|-------------------------------|-------------------------------|
| NO ₂ NO ₃ -N Total | 2.19 * mg/l | 149H* mg/l | / |

| Metals - Specified | Water-Filtere Result Units | Water-Filtere Result Units | Water-Filtere Result Units |
|--------------------|-------------------------------|-------------------------------|-------------------------------|
| Mercury Hg-Diss | 0.04U ug/l | 0.04U ug/l | 0.04U ug/l |

| Metals - ICP Scan | Water-Filtere Result Units | Water-Filtere Result Units | Water-Filtere Result Units |
|-------------------|-------------------------------|-------------------------------|-------------------------------|
| Calcium Ca-Diss | 21.1J* mg/l | 21.1J* mg/l | 21.1J* mg/l |
| Magnesium Mg-Diss | 8.86 * mg/l | 8.86 * mg/l | 8.86 * mg/l |
| Sodium Na-Diss | 7.47E* mg/l | 7.47E* mg/l | 7.47E* mg/l |
| Arsenic As-Diss | 30UJ ug/l | 30UJ ug/l | 30UJ ug/l |
| Barium Ba-Diss | 2.2P* ug/l | 2.2P* ug/l | 2.2P* ug/l |
| Cadmium Cd-Diss | 2.0U ug/l | 2.0U ug/l | 2.0U ug/l |
| Chromium Cr-Diss | 5.0U ug/l | 5.0U ug/l | 5.0U ug/l |
| Copper Cu-Diss | 3.0U ug/l | 3.0U ug/l | 3.0U ug/l |
| Iron Fe-Diss | 2.0UJ ug/l | 2.0UJ ug/l | 2.0UJ ug/l |
| Lead Pb-Diss | 20UJ ug/l | 20UJ ug/l | 20UJ ug/l |
| Manganese Mn-Diss | 1.0U ug/l | 1.0U ug/l | 1.0U ug/l |
| Nickel Ni-Diss | 1.0U ug/l | 1.0U ug/l | 1.0U ug/l |
| Silver Ag-Diss | 3.0U ug/l | 3.0U ug/l | 3.0U ug/l |
| Zinc Zn-Diss | 4.7P* ug/l | 4.7P* ug/l | 4.7P* ug/l |
| Selenium Se-Diss | 50UJ ug/l | 50UJ ug/l | 50UJ ug/l |

Source: Well 1 (Test/Observation)

Officer: PZM Account: D3P11

(Sample Complete)

24-JUL-94
13:14:04

Washington State Department of Ecology
Sample/Project Analysis Results

Project: DOE-003D LAKEWOOD/PLAZA CLEANERS

Laboratory: Ecology, Manchester

Sample No: 91 208095 Description: MW-16B

Begin Date: 91/05/16 :

| | Gen Inorg/Phys-Speci | Water-Total | Ion Chromatography | Water-Total | Result | Units |
|--|----------------------|---------------|--------------------|-------------|--------|-------|
| | | Result | Units | | | |
| Alk-HCO ₃ | CaCO ₃ | 81.1 * | mg/1 | | | |
| Alk-CO ₃ | CaCO ₃ | 110 | mg/1 | | | |
| Hard-Tot | CaCO ₃ | 94.4 * | mg/1 | | | |
| Solids - Specified | | | | Chloride | 6.9 * | mg/1 |
| | | | | Sulfate | 14.8 * | mg/1 |
| Solids T-Dissol | | | | Total | | / |
| Nutrients - Specific | | Water-Total | Result Units | | | |
| NO ₂ NO ₃ -N Total | | 157H* | mg/1 | | | |
| Metals - Specified | | Water-Total | Result Units | | | |
| Mercury Hg-Diss | | 2.17 * | mg/1 | | | |
| Metals ICP Scan | | Water-Filtere | Result Units | | | |
| Calcium Ca-Diss | | Water-Filtere | Result Units | | | |
| Magnesium Mg-Diss | | 2.1 - 8J* | mg/1 | | | |
| Sodium Na-Diss | | 9.29J* | mg/1 | | | |
| Arsenic As-Diss | | 8.28E* | mg/1 | | | |
| Barium Ba-Diss | | 3.0UJ | ug/1 | | | |
| Cadmium Cd-Diss | | 4.3P* | ug/1 | | | |
| Chromium Cr-Diss | | 2.0U | ug/1 | | | |
| Copper Cu-Diss | | 5.0U | ug/1 | | | |
| Iron Fe-Diss | | 3.5P* | ug/1 | | | |
| Lead Pb-Diss | | 5.5JB* | ug/1 | | | |
| Manganese Mn-Diss | | 2.0UJ | ug/1 | | | |
| Nickel Ni-Diss | | 1.5P* | ug/1 | | | |
| Silver Ag-Diss | | 1.0U | ug/1 | | | |
| Zinc Zn-Diss | | 3.0U | ug/1 | | | |
| Selenium Se-Diss | | 8.5P* | ug/1 | | | |
| | | 5.0UJ | ug/1 | | | |

Source: Well (Test/Observation)

Officer: PZM

Account: D3P11

Project: DOE-003D LAKEWOOD/PLAZA CLEANERS

Laboratory: Ecology, Manchester

Sample No: 91 208096

Description: FILTERBL

Begin Date: 91/05/16

| | Metals - ICP Scan | Water-Filtrate Result Units |
|-----------|-------------------|--------------------------------|
| Calcium | Ca-Diss | 0.137B* mg/l |
| Magnesium | Mg-Diss | 0.0341B* mg/l |
| Sodium | Na-Diss | 0.583BE* mg/l |
| Arsenic | As-Diss | 30UJ ug/l |
| Barium | Ba-Diss | 1.0UJ ug/l |
| Cadmium | Cd-Diss | 2.0UJ ug/l |
| Chromium | Cr-Diss | 5.0UJ ug/l |
| Copper | Cu-Diss | 2.2 * ug/l |
| Iron | Fe-Diss | 2.0UJ ug/l |
| Lead | Pb-Diss | 2.0UJ ug/l |
| Manganese | Mn-Diss | 1.0UJ ug/l |
| Nickel | Ni-Diss | 44P* ug/l |
| Silver | Ag-Diss | 3.0UJ ug/l |
| Zinc | Zn-Diss | 15J* ug/l |
| Selenium | Se-Diss | 50UJ ug/l |

Source: Well (Test/Observation)

Officer: PZM

Account: D3P11

(Sample Complete)

29-JUL-91
13:14:04

Washington State Department of Ecology
Sample/Project Analysis Results

Project: DOE-003D LAKEWOOD/PLAZA CLEANERS

Laboratory: Ecology, Manchester

Sample No: 91 208097

Description: TRANSPORT

Begin Date: 91/05/16 :

| Metals - ICP Scan | Specified | Water-Filtere Result Units | Water-Filtere Result Units |
|-------------------|-----------|-------------------------------|-------------------------------|
| Calcium | Ca-Diss | 0.016B* | mg/l |
| Magnesium | Mg-Diss | 0.008BP* | mg/l |
| Sodium | Na-Diss | 0.255BE* | mg/l |
| Arsenic | As-Diss | 30UJ | ug/l |
| Barium | Ba-Diss | 1.0U | ug/l |
| Cadmium | Cd-Diss | 2.0U | ug/l |
| Chromium | Cr-Diss | 5.0U | ug/l |
| Copper | Cu-Diss | 3.0U | ug/l |
| Iron | Fe-Diss | 16P* | ug/l |
| Lead | Pb-Diss | 20UJ | ug/l |
| Manganese | Mn-Diss | 1.0U | ug/l |
| Nickel | Ni-Diss | 10U | ug/l |
| Silver | Ag-Diss | 3.0U | ug/l |
| Zinc | Zn-Diss | 4.0U | ug/l |
| Selenium | Se-Diss | 50UJ | ug/l |

Officer: PZM Account: D3P11

Source: Water (General)

Source: Water (General)

(Sample Complete)

Project: DOE-003D LAKWOOD/PLAZA CLEANERS

Blank ID: BW1140

Page 20
Officer: PZM
Account: D3P11

| | VOA - PP Scan (GCMS) | Water-Totals | VOA - PP Scan (GCMS) | Water-Totals |
|--------------------------|----------------------|--------------|---------------------------|-------------------|
| | Blank #1 | Result Units | Blank #1 | Result Units |
| Carbon Tetrachloride | 1U ug/1 | | Blank | *** Continued *** |
| Acetone | 4J* | ug/1 | Bromobenzene | 1U ug/1 |
| Chloroform | 1U ug/1 | | Toluene | 1U ug/1 |
| Benzene | 1U ug/1 | | Chlorobenzene | 1U ug/1 |
| 1,1,2-Trichloroethane | 1U ug/1 | | 1,2,4-Trichlorobenzene | 1U ug/1 |
| Chloromethane | 0.7J* | ug/1 | Dibromochloromethane | 1U ug/1 |
| Dibromomethane | 1U ug/1 | | Tetrachloroethene | 1U ug/1 |
| Bromo-chloromethane | 1U ug/1 | | Sec-Butylbenzene | 1U ug/1 |
| Chloroethane | 1U ug/1 | | 1,3-Dichloropropane | 1U ug/1 |
| Vinyl Chloride | 1U ug/1 | | Cis-1,2-Dichloroethene | 1U ug/1 |
| Methylene Chloride | 1U ug/1 | | trans-1,2-Dichloroethene+ | 1U ug/1 |
| Carbon Disulfide | 1U ug/1 | | 1,3-Dichlorobenzene | 1U ug/1 |
| Bromoform | 1U ug/1 | | 1,1-Dichloropropane | 1U ug/1 |
| Bromodichloromethane | 1U ug/1 | | 2,2-Dichloropropane | 1U ug/1 |
| 1,1-Dichloroethane | 1U ug/1 | | 2-Hexanone | 1U ug/1 |
| 1,1,1-Dichloroethene | 1U ug/1 | | Ethane, 1,1,1,2-Tetrac+ | 1U ug/1 |
| Trichlorofluoromethane | 1U ug/1 | | cis-1,3-Dichloropropene | 1U ug/1 |
| Methane, Dichlorodiflu+ | 1U ug/1 | | trans-1,3-Dichloroprop+ | 1U ug/1 |
| 1,2-Dichloropropane | 1U ug/1 | | P-Bromofluorobenzene | 98 % Recov |
| 2-Butanone | 2J* | ug/1 | Surrog; 1-Bromo-2-Fluo+ | 102 % Recov |
| 1,1,2-Trichloroethane | 1U ug/1 | | D4-1,2-Dichlorobenzene | 98 % Recov |
| Trichloroethene | 1U ug/1 | | d8-Toluene | 99 % Recov |
| ETHANE, 1,1,2,2-TETRAC+ | 1U ug/1 | | d4-1,2-Dichloroethane | 98 % Recov |
| 1,2,3-Trichlorobenzene | 1U ug/1 | | | |
| Hexachlorobutadiene | 1U ug/1 | | | |
| Naphthalene | 1UJ | ug/1 | | |
| Benzene, 1,2-Dimethyl | 1U ug/1 | | | |
| 2-Chlorotoluene | 1U ug/1 | | | |
| 1,2-Dichlorobenzene | 1U ug/1 | | | |
| 1,2,4-Trimethylbenzene | 1U ug/1 | | | |
| 1,2-Dibromo-3-chloropr+ | 1U ug/1 | | | |
| 1,2,3-Trichloropropane | 1U ug/1 | | | |
| Tert-Butylbenzene | 1U ug/1 | | | |
| Isopropylbenzene (Cume+) | 1U ug/1 | | | |
| P-Isopropyltoluene | 1U ug/1 | | | |
| Ethylbenzene | 1U ug/1 | | | |
| BENZENE, ETHENYL-(STYR+) | 1U ug/1 | | | |
| BENZENE, PROPYL- | 1U ug/1 | | | |
| Butylbenzenes | 1U ug/1 | | | |
| 4-Chlorotoluene | 1U ug/1 | | | |
| 1,4-Dichlorobenzene | 1U ug/1 | | | |
| 1,2-Dibromoethane (EDB) | 1U ug/1 | | | |
| 1,2-Dichloroethane | 1U ug/1 | | | |
| 4-Methyl-2-Pentanone | 1U ug/1 | | | |
| 1,3,5-Trimethylbenzene | 1U ug/1 | | | |

(Sample Complete)

Project: DOE-003D LAKWOOD/PLAZA CLEANERS

Blank ID: BW1143

Officer: PZM Account: D3P11

| | VOA - PP Scan (GCMS) | Water-Totals | VOA - PP Scan (GCMS) | Water-Totals |
|-------------------------|----------------------|--------------|--------------------------|--------------|
| | Blank #2 | Result Units | Blank #2 | Result Units |
| Carbon Tetrachloride | 1U ug/1 | | Bromobenzene | 1U ug/1 |
| Acetone | 4J* | ug/1 | Toluene | 0.3J* ug/1 |
| Chloroform | 1U ug/1 | | Chlorobenzene | 1U ug/1 |
| Benzene | 1U ug/1 | | 1,2,4-Trichlorobenzene | 1U ug/1 |
| 1,1,1-Trichloroethane | 0.5J* | ug/1 | Dibromochloromethane | 1U ug/1 |
| Chloromethane | 0.5J* | ug/1 | Tetrachloroethene | 1U ug/1 |
| Dibromomethane | 1U ug/1 | | Sec-Butylbenzene | 1U ug/1 |
| Bromoform | 1U ug/1 | | 1,3-Dichloropropane | 1U ug/1 |
| Chloroethane | 1U ug/1 | | Cis-1,2-Dichloroethene | 1U ug/1 |
| Vinyl Chloride | 1U ug/1 | * | trans-1,2-Dichloroethene | 1U ug/1 |
| Methylene Chloride | 1U ug/1 | * | 1,3-Dichlorobenzene | 1U ug/1 |
| Carbon Disulfide | 1U ug/1 | | 1,1-Dichloropropene | 1U ug/1 |
| Bromoform | 1U ug/1 | | 2,2-Dichloropropane | 1U ug/1 |
| Bromodichloromethane | 1U ug/1 | | 2-Hexanone | 1U ug/1 |
| 1,1-Dichloroethane | 1U ug/1 | | Ethane, 1,1,1,2-Tetrac- | 1U ug/1 |
| Trichlorofluoromethane | 1U ug/1 | | cis-1,3-Dichloropropene | 1U ug/1 |
| Methane, Dichlorodiflu- | 1U ug/1 | | trans-1,3-Dichloroprop- | 1U ug/1 |
| 1,2-Dichloropropane | 1U ug/1 | | p-Bromofluorobenzene | 97 % Recov |
| 2-Butanone | 2J* | ug/1 | Surrog: 1-Bromo-2-Fluo- | 99 % Recov |
| 1,1,2-Trichloroethane | 1U ug/1 | | D4-1,2-Dichlorobenzene | 99 % Recov |
| Trichloroethene | 1U ug/1 | | d8-Toluene | 100 % Recov |
| ETHANE, 1,1,2,2-TETRAC- | 1U ug/1 | | d4-1,2-Dichloroethane | 104 % Recov |
| 1,2,3-Trichlorobenzene | 1U ug/1 | | | |
| Hexachlorobutadiene | 1U ug/1 | | | |
| Naphthalene | 1U ug/1 | | | |
| Benzene, 1,2-Dimethyl | 1U ug/1 | | | |
| 2-Chlorotoluene | 1U ug/1 | | | |
| 1,2-Dichlorobenzene | 1U ug/1 | | | |
| 1,2,4-Trimethylbenzene | 1U ug/1 | | | |
| 1,2,3-Chloropropene | 1U ug/1 | | | |
| Tert-Butylbenzene | 1U ug/1 | | | |
| Isopropylbenzene (Cume+ | 1U ug/1 | | | |
| P-Isopropyltoluene | 1U ug/1 | | | |
| Ethylbenzene | 1U ug/1 | | | |
| BENZENE, ETHENYL-(STYR- | 1U ug/1 | | | |
| Butylbenzene | 1U ug/1 | | | |
| 4-Chlorotoluene | 1U ug/1 | | | |
| 1,4-Dichlorobenzene | 1U ug/1 | | | |
| 1,2-Dibromoethane (EDB) | 1U ug/1 | | | |
| 1,2-Dichloroethane | 1U ug/1 | | | |
| 4-Methyl-2-Pentanone | 1U ug/1 | | | |
| 1,3,5-Trimethylbenzene | 1U ug/1 | | | |

(Sample Complete)

Project: DOE-003D LAKEWOOD/PLAZA CLEANERS

Blank ID: BW1144

Page 22
Officer: PZM
Account: D3P11

| | VOA - PP Scan (GCMS) | Water-Total | VOA - PP Scan (GCMS) | Water-Total | |
|-------------------------|----------------------|--------------|---------------------------|--------------|------|
| | Blank #1 | Result Units | Blank #1 | Result Units | |
| Carbon Tetrachloride | 1U ug/1 | | Bromobenzene | 1U ug/1 | |
| Acetone | 3J* | ug/1 | Toluene | 0.3J* | ug/1 |
| Chloroform | 1U ug/1 | | Chlorobenzene | 1U ug/1 | |
| Benzene | 1U ug/1 | | 1,2,4-Trichlorobenzene | 1U ug/1 | |
| 1,1,1-Trichloroethane | 0.4J* | ug/1 | Dibromochloromethane | / | ug/1 |
| Chloromethane | 1U ug/1 | | Tetrachloroethene | 1U ug/1 | |
| Dibromomethane | 1U ug/1 | | Sec-Butylbenzene | 1U ug/1 | |
| Bromoform | 1U ug/1 | | 1,3-Dichloropropane | 1U ug/1 | |
| Chloroethane | 1U ug/1 | | Cis-1,2-Dichloroethene | 1U ug/1 | |
| Vinyl Chloride | 1U * | ug/1 | trans-1,2-Dichloroethene+ | 1U ug/1 | |
| Methylene Chloride | 1U ug/1 | | 1,3-Dichlorobenzene | 1U ug/1 | |
| Carbon Disulfide | 1U ug/1 | | 1,1-Dichloropropane | 1U ug/1 | |
| Bromoform | 1U ug/1 | | 2,2-Dichloropropane | 1U ug/1 | |
| Bromodichloromethane | 1U ug/1 | | 2-Hexanone | 1U ug/1 | |
| 1,1-Dichloroethane | 1U ug/1 | | Ethane, 1,1,1,2-Tetrac+ | 1U ug/1 | |
| 1,1,2-Trichloroethane | 1U ug/1 | | cis-1,3-Dichloropropene | 1U ug/1 | |
| Trichlorofluoromethane | 1U ug/1 | | trans-1,3-Dichloroprop+ | 1U ug/1 | |
| Methane, Dichlorodiflu+ | 1U ug/1 | | P-Bromofluorobenzene | 102 % Recov | |
| 1,2-Dichloropropane | 1U ug/1 | | Surrog: 1-Bromo-2-Fluo+ | 101 % Recov | |
| 2-Butanone | 2J* | ug/1 | D4-1,2-Dichlorobenzene | 103 % Recov | |
| 1,1,2-Trichloroethane | 1U ug/1 | | d8-Toluene | 104 % Recov | |
| Trichloroethene | 1U ug/1 | | d4-1,2-Dichloroethane | 102 % Recov | |
| ETHANE, 1,1,2,2-TETRAC+ | 1U ug/1 | | | | |
| 1,2,3-Trichlorobenzene | 1U ug/1 | | | | |
| Naphthalenobutadiene | 1U ug/1 | | | | |
| Benzene, 1,2-Dimethyl | 1U ug/1 | | | | |
| 2-Chlorotoluene | 1U ug/1 | | | | |
| 1,2-Dichlorobenzene | 1U ug/1 | | | | |
| 1,2,4-Trimethylbenzene | 1U ug/1 | | | | |
| 1,2-Dibromo-3-chloropr+ | 1U ug/1 | | | | |
| 1,2,3-Trichloropropane | 1U ug/1 | | | | |
| Tert-Butylbenzene | 1U ug/1 | | | | |
| Isopropylbenzene (Cum+ | 1U ug/1 | | | | |
| p-Isopropyltoluene | 1U ug/1 | | | | |
| Ethybenzene | 1U ug/1 | | | | |
| BENZENE, ETHENYL-(STYR+ | 1U ug/1 | | | | |
| BENZENE, PROPYL- | 1U ug/1 | | | | |
| 4-Chlorotoluene | 1U ug/1 | | | | |
| 1,4-Dichlorobenzene | 1U ug/1 | | | | |
| 1,2-Dibromoethane (EDB) | 1U ug/1 | | | | |
| 1,2-Dichloroethane | 1U ug/1 | | | | |
| 4-Methyl-2-Pentanone | 1U ug/1 | | | | |
| 1,3,5-Trimethylbenzene | 1U ug/1 | | | | |

(Sample Complete)

13:14:04

REDACTED

Project: DOE-003D LAKEWOOD/PLAZA CLEANERS

Blank ID: PB 22.88

Sample / Project Analysis Results

Officer: PZM

Account: D3P11

| | Metals - ICP Scan | Water-Filter Result Units |
|---|-------------------|------------------------------|
| - | Blank #1 | |
| - | Calcium Ca-Diss | 0.167 * mg/l |
| - | Magnesium Mg-Diss | 0.0606 * mg/l |
| - | Sodium Na-Diss | 0.110P* mg/l |
| - | Arsenic As-Diss | 3.0U ug/l |
| - | Barium Ba-Diss | 1.0U ug/l |
| - | Cadmium Cd-Diss | 2.0U ug/l |
| - | Chromium Cr-Diss | 5.0U ug/l |
| - | Copper Cu-Diss | 3.0U ug/l |
| - | Iron Fe-Diss | 9.2P* ug/l |
| - | Lead Pb-Diss | 2.0U ug/l |
| - | Manganese Mn-Diss | 1.0U ug/l |
| - | Nickel Ni-Diss | 1.0U ug/l |
| - | Silver Ag-Diss | 3.0U ug/l |
| - | Zinc Zn-Diss | 4.0U ug/l |
| - | Selenium Se-Diss | 5.0U ug/l |

(Sample Complete)

6-JUN-91

Washington State Department of Ecology
*** Lab Analysis Report ***

Page 1

Transaction #: 06041007 Seq #: 01 (10) Gen Inorg/Phys-Specified
 (WE) Ecology, Manchester Lab
 Project: (DOE-003D) LAKEWOOD/PLAZA CLEANERS D3P11 PZM
 Param: (425 S) Alk-HCO₃ CaCO₃ mg/l

QA Code: () Normal Data
 Instrument: (TITRIT) Titrimetric Measurement
 Method: (SM16-403) Alkalinity, Titrimetric (pH 8.3, 4.5)
 Chemist: (MPS) Sankiewicz, Marek DOE Hours Worked:
 Lab Prep: () Unspecified
 Matrix: (10) Water-Total Date Preprd:
 Units: (10) mg/l Date Anlyzd: 910531

| Line | Sample # | Result | Sample Location/Description | #Days to Anl |
|------|-----------|--------|-----------------------------|--------------|
| 1 | 91 208092 | 77.8 | MW-19A | 910515 (16) |
| 2 | 91 208093 | 74.3 | MW-32 | 910515 (16) |
| 3 | 91 208094 | 82.0 | MW-16A | 910516 (15) |
| 4 | 91 208095 | 81.1 | MW-16B | 910516 (15) |

Record Type: TRNIN2 Date Verified: 6/6/91 By: *[Signature]*
 Transaction Status: Edited Transaction...First Printing...Unverified.
 *** Verified and Transferred to VERTTRANS ***
 Processed: 6-JUN-91 14:35:25 Status: E Batch: A (In CUR DB)

6-JUN-91

Washington State Department of Ecology
*** Lab Analysis Report ***

Page 1

Transaction #: 06041006 Seq #: 01 (10) Gen Inorg/Phys-Specified
 Project: (DOE-003D) LAKEWOOD/PLAZA CLEANERS (WE) Ecology, Manchester Lab
 Param: (430 S) Alk-CO₃ CaCO₃ mg/l D3P11 PZM

QA Code: () Normal Data
 Instrument: (TITRIT) Titrimetric Measurement
 Method: (SM16-403) Alkalinity, Titrimetric (pH 8.3, 4.5)
 Chemist: (MPS) Sankiewicz, Marek DOE Hours Worked:
 Lab Prep: () Unspecified
 Matrix: (10) Water-Total Date Preprd:
 Units: (10) mg/l Date Anlyzd: 910531

| Line | Sample # | Result | Sample Location/Description | #Days to Anl |
|------|-----------|--------|-----------------------------|--------------|
| 1 | 91 208092 | 1U | MW-19A | 910515 (16) |
| 2 | 91 208093 | 1U | MW-32 | 910515 (16) |
| 3 | 91 208094 | 1U | MW-16A | 910516 (15) |
| 4 | 91 208095 | 1U | MW-16B | 910516 (15) |

Record Type: TRNIN2 Date Verified: 6/6/91 By: *JBL*
 Transaction Status: Edited Transaction...First Printing...Unverified
 *** Verified and Transferred to VERTTRANS ***
 Processed: 6-JUN-91 14:35:25 Status: E Batch: A (In CUR DB)

29-MAY-91

Washington State Department of Ecology
*** Lab Analysis Report ***

Page 1

Transaction #: 05290730 Seq #: 01 (15) Solids - Specified
 (WE) Ecology, Manchester Lab
 Project: (DOE-003D) LAKEWOOD/PLAZA CLEANERS D3P11 PZM
 Param: (70300 S) Solids T-Dissol mg/l

QA Code: () Normal Data
 Instrument: (GRAV) Gravimetric Measurement
 Method: (EP1-160.1) Residue, Filterable, Gravimetric, Dried at 180 Deg
 Chemist: (MLE) Elling, Michelle DOE Hours Worked:
 Lab Prep: () Unspecified Date Preprd:
 Matrix: (10) Water-Total Date Anlyzd: 910523
 Units: (10) mg/l

| Line | Sample # | Result | Sample Location/Description | #Days to Anl |
|------|-----------|--------|-----------------------------|--------------|
| 1 | 91 208092 | 138H | MW-19A | 910515 (8) |
| 2 | 91 208093 | 219H | MW-32 | 910515 (8) |
| 3 | 91 208094 | 149H | MW-16A | 910516 (7) |
| 4 | 91 208095 | 157H | MW-16B | 910516 (7) |

Record Type: TRNIN2 Date Verified: 5-29-91 By: D. M. Lerner
 Transaction Status: New Transaction...First Printing...Unverified.
 Processed: 29-MAY-91 07:57:52 Status: N Batch: (In CUR DB)

30-MAY-91

Washington State Department of Ecology
*** Lab Analysis Report ***

Page 1

Transaction #: 05300744 Seq #: 01 (10) Gen Inorg/Phys-Specified
 Project: (DOE-003D) LAKEWOOD/PLAZA CLEANERS (WE) Ecology, Manchester Lab
 Param: (900 S) Hard-Tot CaCO₃ mg/l D3P11 PZM

QA Code: () Normal Data
 Instrument: (TITRIT) Titrimetric Measurement
 Method: (EP1-130.2) Hardness, Total (mg/l as CaCO₃), Titrimetric, EDTA
 Chemist: (MLE) Elling, Michelle DOE Hours Worked:
 Lab Prep: () Unspecified
 Matrix: (10) Water-Total Date Preprd:
 Units: (10) mg/l Date Anlyzd: 910528

| Line | Sample # | Result | Sample Location/Description | #Days to Anl |
|------|-----------|--------|-----------------------------|--------------|
| 1 | 91 208092 | 89.9 | MW-19A | 910515 (13) |
| 2 | 91 208093 | 86.4 | MW-32 | 910515 (13) |
| 3 | 91 208094 | 95.9 | MW-16A | 910516 (12) |
| 4 | 91 208095 | 94.4 | MW-16B | 910516 (12) |

Record Type: TRNIN2 Date Verified: 5-30-91 By: D. L. Elling
 Transaction Status: New Transaction...First Printing...Unverified.
 Processed: 30-MAY-91 07:47:10 Status: N Batch: (In CUR DB)

22-MAY-91

Washington State Department of Ecology
*** Lab Analysis Report ***

Page 1

Transaction #: 05220659 Seq #: 01 (20) Nutrients - Specified
 (WE) Ecology, Manchester Lab
 Project: (DOE-003D) LAKEWOOD/PLAZA CLEANERS D3P11 PZM
 Param: (630 S) NO₂NO₃-N Total mg/l

QA Code: () Normal Data
 Instrument: (ALPKEM) Auto Analyzer, ALPKEM 303 (DOE)
 Method: (EP1-353.2) Nitrogen, (Nitrate-Nitrite), Colorimetric, Automat
 Chemist: (DXT) Thomson, Dave DOE Hours Worked:
 Lab Prep: () Unspecified
 Matrix: (10) Water-Total Date Preprd:
 Units: (10) mg/l Date Anlyzd: 910521

| Line | Sample # | Result | Sample Location/Description | #Days to Anl |
|------|-----------|--------|-----------------------------|--------------|
| 1 | 91 208092 | 1.45 ✓ | MW-19A | 910515 (6) |
| 2 | 91 208093 | 2.13 ✓ | MW-32 | 910515 (6) |
| 3 | 91 208094 | 2.19 ✓ | MW-16A | 910516 (5) |
| 4 | 91 208095 | 2.17 ✓ | MW-16B | 910516 (5) |

Record Type: TRNIN2 Date Verified: 5/14/91 By: J.D.
 Transaction Status: New Transaction...First Printing...Unverified.
 Processed: 22-MAY-91 10:54:51 Status: N Batch: (In CUR DB)

30-MAY-91

Washington State Department of Ecology
*** Lab Analysis Report ***

Page 1

Transaction #: 05300709 Seq #: 01 (80) Ion Chromatography
 Project: (DOE-003D) LAKEWOOD/PLAZA CLEANERS (WE) Ecology, Manchester Lab
 Param: (940 S) Chloride D3P11 PZM
 mg/l

QA Code: () Normal Data
 Instrument: (IC-2020I) Dionex #IC-2020 Ion Chromatograph
 Method: (EP1-300.0) Inorganic Anions, Ion Chromatography
 Chemist: (MPS) Sankiewicz, Marek DOE Hours Worked:
 Lab Prep: () Unspecified
 Matrix: (10) Water-Total Date Preprd:
 Units: (10) mg/l Date Anlyzd: 910528

| Line | Sample # | Result | Sample Location/Description | #Days to Anl |
|------|-----------|--------|-----------------------------|--------------|
| 1 | 91 208092 | 4.7 | MW-19A | 910515 (13) |
| 2 | 91 208093 | 7.2 | MW-32 | 910515 (13) |
| 3 | 91 208094 | 6.9 | MW-16A | 910516 (12) |
| 4 | 91 208095 | 6.9 | MW-16B | 910516 (12) |

Record Type: TRNIN2 Date Verified: 5/30/91 By: *[Signature]*
 Transaction Status: New Transaction...Reprint...Unverified.
 Processed: 30-MAY-91 07:47:10 Status: P Batch: (In CUR DB) *[Signature]*

30-MAY-91

Washington State Department of Ecology
*** Lab Analysis Report ***

Page 1

Transaction #: 05300708 Seq #: 01 (80) Ion Chromatography
 (WE) Ecology, Manchester Lab
 Project: (DOE-003D) LAKEWOOD/PLAZA CLEANERS D3P11 PZM
 Param: (945 S) Sulfate Total mg/l

QA Code: () Normal Data
 Instrument: (IC-2020I) Dionex #IC-2020 Ion Chromatograph
 Method: (EP1-300.0) Inorganic Anions, Ion Chromatography
 Chemist: (MPS) Sankiewicz, Marek DOE Hours Worked:
 Lab Prep: () Unspecified Date Preprd:
 Matrix: (10) Water-Total Date Anlyzd: 910528
 Units: (10) mg/l

| Line | Sample # | Result | Sample Location/Description | #Days to Anl |
|------|-----------|--------|-----------------------------|--------------|
| 1 | 91 208092 | 10.7 | MW-19A | 910515 (13) |
| 2 | 91 208093 | 11.3 | MW-32 | 910515 (13) |
| 3 | 91 208094 | 14.0 | MW-16A | 910516 (12) |
| 4 | 91 208095 | 14.8 | MW-16B | 910516 (12) |

Record Type: TRNIN2 Date Verified: 5/30/91 By: *Bony*
 Transaction Status: New Transaction...Reprint...Unverified.
 Processed: 30-MAY-91 07:47:10 Status: P Batch: (In CUR DB)



STATE OF WASHINGTON
DEPARTMENT OF ECOLOGY

Post Office Box 307 • Manchester, Washington 98353-0346 • (206) 895-4740

August 12, 1991

TO: Pam Marty, Project Officer
EILS

THROUGH: Dick Huntamer

FROM: Greg Perez, Chemist
Manchester Lab

SUBJECT: Lakewood/Plaza Cleaners

The two samples marked MW-20A (Lab #91208089) and MW-20B (Lab #91208088) were reanalyzed at your request. High levels of tetrachloroethene were found in MW-20A, none in MW-20B.

This reanalysis confirms the initial analysis of the samples. Both samples were collected in duplicate. Only one of these vials was analyzed leaving one unopened vial. The opened vial was retained with some sample remaining and stored under refrigeration. This vial was reanalyzed. The preliminary data for MW-20A indicates an approximate 20% loss compared to the original analysis. This is actually a better agreement than I would have expected after this length of time. I found no target compounds in MW-20B. This is to be expected in a low level sample.

I will review the data as soon as possible. If you need actual results immediately, please call and I can give you preliminary verbal results.

If you have any more questions, feel free to call.

GP:mb

cc: Bill Kammin

MANCHESTER ENVIRONMENTAL LABORATORY
7411 Beach Drive SE , Port Orchard Washington 98366

CASE NARRATIVE

September 9, 1991

Subject: Lakewood /Plaza Cleaners Reanalysis

Samples: 91- 208088 - 208089

Case No. DOE-003D

Officer: Pam Marti

By: Dickey D. Huntamer
Organics Analysis Unit

VOLATILE ORGANIC ANALYSIS

ANALYTICAL METHODS:

Volatile organic compounds were analyzed using Manchester modification of the EPA CLP and SW 846 Method 8240 purge-trap procedure with capillary GC/MS analysis. Normal CLP QA/QC procedures were performed on the samples.

HOLDING TIMES:

These samples were previously analyzed within holding times. Reanalysis was requested by the Project Officer after 86 days had elapsed. All analytical results were given the "J" qualifier because recommended holding times were exceeded by 72 days.

BLANKS:

No significant blank contamination was detected.

SURROGATES:

Surrogate recoveries were within acceptable CLP limits for the sample and blank.

MATRIX SPIKE AND MATRIX SPIKE DUPLICATE:

No matrix spikes were analyzed with these samples.

SPECIAL ANALYTICAL PROBLEMS:

The analysis results were consistent with the previous analysis. In sample 91-208089 a 20% to 31% loss of analyte occurred over the seventy plus days, most likely due to volatilization into the headspace left over from the original analysis. All data was given the "J" qualifier for being over holding times.

DATA QUALIFIER CODES:

- U - The analyte was not detected at or above the reported value.
- J - The analyte was positively identified. The associated numerical value is an estimate.
- UJ - The analyte was not detected at or above the reported estimated result.
- REJ - The data are unusable for all purposes.
- EXP - The result is equal to the number before EXP times 10 to the power of the number after EXP. As an example 3EXP6 equals 3×10^6 .
- NAF - Not analyzed for.
- N - For organic analytes there is evidence the analyte is present in this sample.
- NJ - There is evidence that the analyte is present. The associated numerical result is an estimate.
- E - This qualifier is used when the concentration of the associated value exceeds the known calibration range.
- * - The analyte was present in the sample. (Visual Aid to locate detected compound on report sheet.)

30-SEP-91

Washington State Department of Ecology
*** Lab Analysis Report ***

Page 1

=> Transaction #: 09269907 Laboratory: (WE) Ecology, Manchester Lab
Work Group: (51) VOA - PP Scan (GCMS)
Instrument: (GCMS-E1) EPA1 GC/MS INCOS-5100 Capillary Colu
Method: (EP2-624) GC/MS Purge and Trap Scan
Chemist: (LAB) Lab (General R/O) Hours Worked: _____
Project: DOE-003E LAKEWOOD/PLAZA CLEANERS Prg Ele#: D3P11
rj Off: Marti, Pam DOE Analysis Due: 910823 Revised Due:

*** Sample Records in Transaction ***

| Seq# | Sample # | QA | Date/Time | Description | Alternate Keys |
|------|----------|------|-----------|-------------|----------------|
| 01 | 91347210 | | 910822 | MW-20A | |
| 02 | 91347211 | | 910822 | MW-20B | |
| 04 | 91347211 | LMX1 | 910822 | MW-20B | |
| 05 | 91347211 | LMX2 | 910822 | MW-20B | |
| 06 | 91347211 | LBK1 | 910822 | MW-20B | |
| 07 | 91347211 | LBK2 | 910822 | MW-20B | |

Record Type: TRNIN3 Date Verified: 9/30/91 By: GREGORY PEREZ
Transaction Status: Edited Transaction...First Printing...Unverified
Processed: 30-SEP-91 10:28:17 Status: E Batch: (In CUR DB) GREGORY PEREZ

30-SEP-91

Washington State Department of Ecology
*** Lab Analysis Report ***

Page 2

Transaction #: 09269907 Seq #: 01 (51) VOA - PP Scan (GCMS)
 Proj Code : DOE-003E LAKEWOOD/PLAZA CLEANERS PE # : D3P11

Sample No.: 91 347210

Alternate Keys:

Sample Matrix: (10) Water-Total Units: (11) ug/l %Sld's: _____
 QA Code: () Unspecified Peaks Total: _____
 Date Extracted: Date Analyzed: 910904 # Days to Ext/Anal: 07 13

| Line | Par # | Parameter Description | Units | Value |
|------|----------|------------------------------|-------|-------|
| 1 | 74873 | Chloromethane | ug/l | 1U |
| 2 | 75718 | Methane, Dichlorodifluoro- | ug/l | 1U |
| 3 | 74839 | Bromomethane | ug/l | 1U |
| 4 | 75014 | Vinyl Chloride | ug/l | 1U |
| 5 | 75003 | Chloroethane | ug/l | 1U |
| 6 | 75694 | Trichlorofluoromethane | ug/l | 1U |
| 7 | 75092 | Methylene Chloride | ug/l | 1U |
| 8 | 67641 | Acetone | ug/l | 1UJ |
| 9 | 75150 | Carbon Disulfide | ug/l | 1U |
| 10 | 75354 | 1,1-Dichloroethene | ug/l | 1U |
| 11 | 75343 | 1,1-Dichloroethane | ug/l | 1U |
| 12 | 156605 | trans-1,2-Dichloroethene | ug/l | 1UJ |
| 13 | 156592 | Cis-1,2-Dichloroethene | ug/l | 1U |
| 14 | 590207 | 2,2-Dichloropropane | ug/l | 1U |
| 15 | 74975 | Bromochloromethane | ug/l | 1U |
| 16 | 67663 | Chloroform | ug/l | 1U |
| 17 | 107062 | 1,2-Dichloroethane | ug/l | 1U |
| 18 | 78933 | 2-Butanone | ug/l | 1U |
| 19 | 71556 | 1,1,1-Trichloroethane | ug/l | 0.2J |
| 20 | 56235 | Carbon Tetrachloride | ug/l | 1U |
| 21 | 563586 | 1,1-Dichloropropene | ug/l | 1U |
| 22 | 75274 | Bromodichloromethane | ug/l | 1U |
| 23 | 78875 | 1,2-Dichloropropane | ug/l | 1U |
| 24 | 74953 | Dibromomethane | ug/l | 1U |
| 25 | 10061026 | trans-1,3-Dichloropropene | ug/l | 1U |
| 26 | 79016 | Ethene, trichloro- | ug/l | 1U |
| 27 | 124481 | Dibromochloromethane | ug/l | 1U |
| 28 | 106934 | 1,2-Dibromoethane (EDB) | ug/l | 1U |
| 29 | 79005 | 1,1,2-Trichloroethane | ug/l | 1U |
| 30 | 142289 | 1,3-Dichloropropane | ug/l | 1U |
| 31 | 71432 | Benzene | ug/l | 1U |
| 32 | 10061015 | cis-1,3-Dichloropropene | ug/l | 1U |
| 33 | 75252 | Bromoform | ug/l | 1U |
| 34 | 591786 | 2-Hexanone | ug/l | 1U |
| 35 | 108101 | 4-Methyl-2-Pentanone | ug/l | 1U |
| 36 | 127184 | Tetrachloroethene | ug/l | 1U |
| 37 | 79345 | ETHANE, 1,1,2,2-TETRACHLORO- | ug/l | 1U |
| 38 | 630206 | Ethane, 1,1,1,2-Tetrachloro- | ug/l | 1U |
| 39 | 108883 | Toluene | ug/l | 1U |
| 40 | 108907 | Chlorobenzene | ug/l | 1U |
| 41 | 100414 | Ethylbenzene | ug/l | 1U |
| 42 | 100425 | BENZENE, ETHENYL-(STYRENE) | ug/l | 1U |
| 43 | 108861 | Bromobenzene | ug/l | 1U |
| 44 | 96184 | 1,2,3-Trichloropropane | ug/l | 1U |
| 45 | 95498 | 2-Chlorotoluene | ug/l | 1U |
| 46 | 106434 | 4-Chlorotoluene | ug/l | 1U |
| 47 | 1330207 | Total Xylenes | ug/l | 1U |
| 48 | 95636 | 1,2,4-Trimethylbenzene | ug/l | 1U |
| 49 | 98066 | Tert-Butylbenzene | ug/l | 1U |
| 50 | 108678 | 1,3,5-Trimethylbenzene | ug/l | 1U |

(continued on next page)

30-SEP-91

Washington State Department of Ecology
*** Lab Analysis Report ***

Page 3

Transaction #: 09269907 Seq #: 01 (51) VOA - PP Scan (GCMS)

Sample No.: 91 347210 (continued from previous page)

| Line | Par # | Parameter Description | Units | Value |
|------|----------|------------------------------|---------|---------------|
| 51 | 135988 | Sec-Butylbenzene | ug/l | 1U |
| 52 | 99876 | p-Isopropyltoluene | ug/l | 1U |
| 53 | 104518 | Butylbenzene | ug/l | 1U |
| 54 | 96128 | 1,2-Dibromo-3-chloropropane | ug/l | 1U |
| 55 | 87616 | 1,2,3-Trichlorobenzene | ug/l | 1U |
| 56 | 98828 | Isopropylbenzene (Cumene) | ug/l | 1U |
| 57 | 103651 | BENZENE, PROPYL- | ug/l | 1U |
| 58 | 541731 | 1,3-Dichlorobenzene | ug/l | 1U |
| 59 | 106467 | 1,4-Dichlorobenzene | ug/l | 1U |
| 60 | 95501 | 1,2-Dichlorobenzene | ug/l | 1U |
| 61 | 120821 | 1,2,4-Trichlorobenzene | ug/l | 1U |
| 62 | 91203 | Naphthalene | ug/l | 1U |
| 63 | 87683 | Hexachlorobutadiene | ug/l | 1U |
| 64 | -762492 | Surrog: 1-Bromo-2-Fluoroetha | % Recov | 146 (Surr) PR |
| 65 | 2747582 | d8-Toluene | % Recov | 95 (Surr) PR |
| 66 | -460004 | p-Bromofluorobenzene | % Recov | 92 (Surr) PR |
| 67 | 17070070 | d4-1,2-Dichloroethane | % Recov | 96 (Surr) PR |
| 68 | 2199691 | D4-1,2-Dichlorobenzene | % Recov | 102 (Surr) PR |

30-SEP-91

Washington State Department of Ecology
*** Lab Analysis Report ***

Page 4

Transaction #: 09269907 Seq #: 02 (51) VOA - PP Scan (GCMS)
Proj Code : DOE-003E LAKEWOOD/PLAZA CLEANERS PE # : D3P11

Sample No.: 91 347211 Alternate Keys:

Samp Matrix: (10) Water-Total Units: (11) ug/l %Slds: _____
 QA Code: () Unspecified Peaks Total: _____
 Date Extracted: Date Analyzed: 910904 # Days to Ext/Anal: 07 13

| Line | Par # | Parameter Description | Units | Value |
|------|----------|------------------------------|-------|-------|
| 1 | 74873 | Chloromethane | ug/l | 1U |
| 2 | 75718 | Methane, Dichlorodifluoro- | ug/l | 1U |
| 3 | 74839 | Bromomethane | ug/l | 1U |
| 4 | 75014 | Vinyl Chloride | ug/l | 0.3J |
| 5 | 75003 | Chloroethane | ug/l | 1U |
| 6 | 75694 | Trichlorofluoromethane | ug/l | 1U |
| 7 | 75092 | Methylene Chloride | ug/l | 1U |
| 8 | 67641 | Acetone | ug/l | 1UJ |
| 9 | 75150 | Carbon Disulfide | ug/l | 1U |
| 10 | 75354 | 1,1-Dichloroethene | ug/l | 1U |
| 11 | 75343 | 1,1-Dichloroethane | ug/l | 1U |
| 12 | 156605 | trans-1,2-Dichloroethene | ug/l | 0.8J |
| 13 | 156592 | Cis-1,2-Dichloroethene | ug/l | 22 |
| 14 | 590207 | 2,2-Dichloropropane | ug/l | 1U |
| 15 | 74975 | Bromochloromethane | ug/l | 1U |
| 16 | 67663 | Chloroform | ug/l | 0.2J |
| 17 | 107062 | 1,2-Dichloroethane | ug/l | 1U |
| 18 | 78933 | 2-Butanone | ug/l | 1U |
| 19 | 71556 | 1,1,1-Trichloroethane | ug/l | 0.3J |
| 20 | 56235 | Carbon Tetrachloride | ug/l | 1U |
| 21 | 563586 | 1,1-Dichloropropene | ug/l | 1U |
| 22 | 75274 | Bromodichloromethane | ug/l | 1U |
| 23 | 78875 | 1,2-Dichloropropene | ug/l | 1U |
| 24 | 74953 | Dibromomethane | ug/l | 1U |
| 25 | 10061026 | trans-1,3-Dichloropropene | ug/l | 1U |
| 26 | 79016 | Ethene, trichloro- | ug/l | 16J |
| 27 | 124481 | Dibromochloromethane | ug/l | 1U |
| 28 | 106934 | 1,2-Dibromoethane (EDB) | ug/l | 1U |
| 29 | 79005 | 1,1,2-Trichloroethane | ug/l | 1U |
| 30 | 142289 | 1,3-Dichloropropene | ug/l | 1U |
| 31 | 71432 | Benzene | ug/l | 1UJ |
| 32 | 10061015 | cis-1,3-Dichloropropene | ug/l | 1U |
| 33 | 75252 | Bromoform | ug/l | 1U |
| 34 | 591786 | 2-Hexanone | ug/l | 1U |
| 35 | 108101 | 4-Methyl-2-Pentanone | ug/l | 1U |
| 36 | 127184 | Tetrachloroethene | ug/l | 920 |
| 37 | 79345 | ETHANE, 1,1,2,2-TETRACHLORO- | ug/l | 1U |
| 38 | 630206 | Ethane, 1,1,1,2-Tetrachloro- | ug/l | 1U |
| 39 | 108883 | Toluene | ug/l | 1U |
| 40 | 108907 | Chlorobenzene | ug/l | 0.1J |
| 41 | 100414 | Ethylbenzene | ug/l | 1U |
| 42 | 100425 | BENZENE, ETHENYL-(STYRENE) | ug/l | 1U |
| 43 | 108861 | Bromobenzene | ug/l | 1U |
| 44 | 96184 | 1,2,3-Trichloropropene | ug/l | 1U |
| 45 | 95498 | 2-Chlorotoluene | ug/l | 1U |
| 46 | 106434 | 4-Chlorotoluene | ug/l | 1U |
| 47 | 1330207 | Total Xylenes | ug/l | 1U |
| 48 | 95636 | 1,2,4-Trimethylbenzene | ug/l | 1U |
| 49 | 98066 | Tert-Butylbenzene | ug/l | 1U |
| 50 | 108678 | 1,3,5-Trimethylbenzene | ug/l | 1U |

(continued on next page)

30-SEP-91

Washington State Department of Ecology
*** Lab Analysis Report ***

Page 5

Transaction #: 09269907 Seq #: 02 (51) VOA - PP Scan (GCMS)

Sample No.: 91 347211 (continued from previous page)

| Line | Par # | Parameter Description | Units | Value |
|------|----------|------------------------------|---------|---------------|
| 51 | 135988 | Sec-Butylbenzene | ug/l | 1U |
| 52 | 99876 | p-Isopropyltoluene | ug/l | 1U |
| 53 | 104518 | Butylbenzene | ug/l | 1U |
| 54 | 96128 | 1,2-Dibromo-3-chloropropane | ug/l | 1U |
| 55 | 87616 | 1,2,3-Trichlorobenzene | ug/l | 1U |
| 56 | 98828 | Isopropylbenzene (Cumene) | ug/l | 1U |
| 57 | 103651 | BENZENE, PROPYL- | ug/l | 1U |
| 58 | 541731 | 1,3-Dichlorobenzene | ug/l | 1U |
| 59 | 106467 | 1,4-Dichlorobenzene | ug/l | 1U |
| 60 | 95501 | 1,2-Dichlorobenzene | ug/l | 1U |
| 61 | 120821 | 1,2,4-Trichlorobenzene | ug/l | 1U |
| 62 | 91203 | Naphthalene | ug/l | 1U |
| 63 | 87683 | Hexachlorobutadiene | ug/l | 1U |
| 64 | -762492 | Surrog: 1-Bromo-2-Fluoroetha | % Recov | 101 (Surr) PR |
| 65 | 2747582 | d8-Toluene | % Recov | 93 (Surr) PR |
| 66 | -460004 | p-Bromofluorobenzene | % Recov | 94 (Surr) PR |
| 67 | 17070070 | d4-1,2-Dichloroethane | % Recov | 98 (Surr) PR |
| 68 | 2199691 | D4-1,2-Dichlorobenzene | % Recov | 106 (Surr) PR |

30-SEP-91

Washington State Department of Ecology
*** Lab Analysis Report ***

Page 6

Transaction #: 09269907 Seq #: 04 (51) VOA - PP Scan (GCMS)
Proj Code : DOE-003E LAKEWOOD/PLAZA CLEANERS PE # : D3P11

Sample No.: 91 347211

Alternate Keys:

| | | | | |
|--|-----------------------|---------------------|--------------|-------|
| Samp Matrix: (10) Water-Total | Units: (94) | % Recov | % Slds: | _____ |
| QA Code: (LMX1) Lab Mtrx Spike #1 (% Rec | | | Peaks Total: | _____ |
| Date Extracted: | Date Analyzed: 910905 | # Days to Ext/Anal: | 07 | 14 |

| Line | Par # | Parameter Description | Units | Value |
|------|----------|------------------------------|---------|-------|
| 1 | 74873 | Chloromethane | % Recov | 91 |
| 2 | 75718 | Methane, Dichlorodifluoro- | % Recov | 83 |
| 3 | 74839 | Bromomethane | % Recov | 95 |
| 4 | 75014 | Vinyl Chloride | % Recov | 89 |
| 5 | 75003 | Chloroethane | % Recov | 85 |
| 6 | 75694 | Trichlorofluoromethane | % Recov | 103 |
| 7 | 75092 | Methylene Chloride | % Recov | 88 |
| 8 | 67641 | Acetone | % Recov | 22J |
| 9 | 75150 | Carbon Disulfide | % Recov | 90 |
| 10 | 75354 | 1,1-Dichloroethene | % Recov | 101 |
| 11 | 75343 | 1,1-Dichloroethane | % Recov | 103 |
| 12 | 156605 | trans-1,2-Dichloroethene | % Recov | 104J |
| 13 | 156592 | Cis-1,2-Dichloroethene | % Recov | 105 |
| 14 | 590207 | 2,2-Dichloropropane | % Recov | 108 |
| 15 | 74975 | Bromochloromethane | % Recov | 108 |
| 16 | 67663 | Chloroform | % Recov | 104 |
| 17 | 107062 | 1,2-Dichloroethane | % Recov | 104 |
| 18 | 78933 | 2-Butanone | % Recov | 67 |
| 19 | 71556 | 1,1,1-Trichloroethane | % Recov | 109 |
| 20 | 56235 | Carbon Tetrachloride | % Recov | 110 |
| 21 | 563586 | 1,1-Dichloropropene | % Recov | 105 |
| 22 | 75274 | Bromodichloromethane | % Recov | 106 |
| 23 | 78875 | 1,2-Dichloropropene | % Recov | 107 |
| 24 | 74953 | Dibromomethane | % Recov | 105 |
| 25 | 10061026 | trans-1,3-Dichloropropene | % Recov | 96 |
| 26 | 79016 | Ethene, trichloro- | % Recov | 109 |
| 27 | 124481 | Dibromochloromethane | % Recov | 110 |
| 28 | 106934 | 1,2-Dibromoethane (EDB) | % Recov | 118 |
| 29 | 79005 | 1,1,2-Trichloroethane | % Recov | 109 |
| 30 | 142289 | 1,3-Dichloropropene | % Recov | 111 |
| 31 | 71432 | Benzene | % Recov | 106 |
| 32 | 10061015 | cis-1,3-Dichloropropene | % Recov | 79 |
| 33 | 75252 | Bromoform | % Recov | 119 |
| 34 | 591786 | 2-Hexanone | % Recov | 110 |
| 35 | 108101 | 4-Methyl-2-Pentanone | % Recov | 110 |
| 36 | 127184 | Tetrachloroethene | % Recov | 109 |
| 37 | 79345 | ETHANE, 1,1,2,2-TETRACHLORO- | % Recov | 110 |
| 38 | 630206 | Ethane, 1,1,1,2-Tetrachloro- | % Recov | 111 |
| 39 | 108883 | Toluene | % Recov | 103 |
| 40 | 108907 | Chlorobenzene | % Recov | 105 |
| 41 | 100414 | Ethylbenzene | % Recov | 100 |
| 42 | 100425 | BENZENE, ETHENYL-(STYRENE) | % Recov | 101 |
| 43 | 108861 | Bromobenzene | % Recov | 106 |
| 44 | 96184 | 1,2,3-Trichloropropene | % Recov | 113 |
| 45 | 95498 | 2-Chlorotoluene | % Recov | 102 |
| 46 | 106434 | 4-Chlorotoluene | % Recov | 98 |
| 47 | 1330207 | Total Xylenes | % Recov | 99 |
| 48 | 95636 | 1,2,4-Trimethylbenzene | % Recov | 99 |
| 49 | 98066 | Tert-Butylbenzene | % Recov | 99 |
| 50 | 108678 | 1,3,5-Trimethylbenzene | % Recov | 99 |

(continued on next page)

30-SEP-91

Washington State Department of Ecology
*** Lab Analysis Report ***

Page 7

Transaction #: 09269907 Seq #: 04 (51) VOA - PP Scan (GCMS)

Sample No.: 91 347211 (continued from previous page)

| Line | Par # | Parameter Description | Units | Value |
|------|----------|------------------------------|---------|---------------|
| 51 | 135988 | Sec-Butylbenzene | % Recov | 97 |
| 52 | 99876 | p-Isopropyltoluene | % Recov | 99 |
| 53 | 104518 | Butylbenzene | % Recov | 98 |
| 54 | 96128 | 1,2-Dibromo-3-chloropropane | % Recov | 110 |
| 55 | 87616 | 1,2,3-Trichlorobenzene | % Recov | 111 |
| 56 | 98828 | Isopropylbenzene (Cumene) | % Recov | 101 |
| 57 | 103651 | BENZENE, PROPYL- | % Recov | 101 |
| 58 | 541731 | 1,3-Dichlorobenzene | % Recov | 103 |
| 59 | 106467 | 1,4-Dichlorobenzene | % Recov | 101 |
| 60 | 95501 | 1,2-Dichlorobenzene | % Recov | 102 |
| 61 | 120821 | 1,2,4-Trichlorobenzene | % Recov | 109 |
| 62 | 91203 | Naphthalene | % Recov | 109 |
| 63 | 87683 | Hexachlorobutadiene | % Recov | 105 |
| 64 | -762492 | Surrog: 1-Bromo-2-Fluoroetha | % Recov | 102 (Surr) PR |
| 65 | 2747582 | d8-Toluene | % Recov | 100 (Surr) PR |
| 66 | -460004 | p-Bromofluorobenzene | % Recov | 98 (Surr) PR |
| 67 | 17070070 | d4-1,2-Dichloroethane | % Recov | 100 (Surr) PR |
| 68 | 2199691 | D4-1,2-Dichlorobenzene | % Recov | 97 (Surr) PR |

30-SEP-91

Washington State Department of Ecology
*** Lab Analysis Report ***

Page 8

ransaction #: 09269907 Seq #: 05 (51) VOA - PP Scan (GCMS)
 roj Code : DOE-003E LAKEWOOD/PLAZA CLEANERS PE # : D3P11

ample No.: 91 347211

Alternate Keys:

amp Matrix: (10) Water-Total Units: (94) % Recov %Slds: _____
 A Code: (LMX2) Lab Mtrx Spike #2 (% Rec Peaks Total: _____
 ate Extracted: Date Analyzed: 910905 # Days to Ext/Anal: 07 14

| Line | Par # | Parameter Description | Units | Value |
|------|----------|------------------------------|---------|-------|
| 1 | 74873 | Chloromethane | % Recov | 77 |
| 2 | 75718 | Methane, Dichlorodifluoro- | % Recov | 64 |
| 3 | 74839 | Bromomethane | % Recov | 82 |
| 4 | 75014 | Vinyl Chloride | % Recov | 76 |
| 5 | 75003 | Chloroethane | % Recov | 79 |
| 6 | 75694 | Trichlorofluoromethane | % Recov | 84 |
| 7 | 75092 | Methylene Chloride | % Recov | 90 |
| 8 | 67641 | Acetone | % Recov | 30J |
| 9 | 75150 | Carbon Disulfide | % Recov | 87 |
| 10 | 75354 | 1,1-Dichloroethene | % Recov | 103 |
| 11 | 75343 | 1,1-Dichloroethane | % Recov | 108 |
| 12 | 156605 | trans-1,2-Dichloroethene | % Recov | 108J |
| 13 | 156592 | Cis-1,2-Dichloroethene | % Recov | 108 |
| 14 | 590207 | 2,2-Dichloropropane | % Recov | 108 |
| 15 | 74975 | Bromochloromethane | % Recov | 108 |
| 16 | 67663 | Chloroform | % Recov | 109 |
| 17 | 107062 | 1,2-Dichloroethane | % Recov | 113 |
| 18 | 78933 | 2-Butanone | % Recov | 83 |
| 19 | 71556 | 1,1,1-Trichloroethane | % Recov | 123 |
| 20 | 56235 | Carbon Tetrachloride | % Recov | 125 |
| 21 | 563586 | 1,1-Dichloropropene | % Recov | 121 |
| 22 | 75274 | Bromodichloromethane | % Recov | 121 |
| 23 | 78875 | 1,2-Dichloropropene | % Recov | 124 |
| 24 | 74953 | Dibromomethane | % Recov | 122 |
| 25 | 10061026 | trans-1,3-Dichloropropene | % Recov | 111 |
| 26 | 79016 | Ethene, trichloro- | % Recov | 122 |
| 27 | 124481 | Dibromochloromethane | % Recov | 127 |
| 28 | 106934 | 1,2-Dibromoethane (EDB) | % Recov | 136 |
| 29 | 79005 | 1,1,2-Trichloroethane | % Recov | 127 |
| 30 | 142289 | 1,3-Dichloropropene | % Recov | 129 |
| 31 | 71432 | Benzene | % Recov | 120 |
| 32 | 10061015 | cis-1,3-Dichloropropene | % Recov | 92 |
| 33 | 75252 | Bromoform | % Recov | 136 |
| 34 | 591786 | 2-Hexanone | % Recov | 130 |
| 35 | 108101 | 4-Methyl-2-Pentanone | % Recov | 130 |
| 36 | 127184 | Tetrachloroethene | % Recov | 125 |
| 37 | 79345 | ETHANE, 1,1,2,2-TETRACHLORO- | % Recov | 123 |
| 38 | 630206 | Ethane, 1,1,1,2-Tetrachloro- | % Recov | 124 |
| 39 | 108883 | Toluene | % Recov | 110 |
| 40 | 108907 | Chlorobenzene | % Recov | 108 |
| 41 | 100414 | Ethylbenzene | % Recov | 107 |
| 42 | 100425 | BENZENE, ETHENYL-(STYRENE) | % Recov | 105 |
| 43 | 108861 | Bromobenzene | % Recov | 112 |
| 44 | 96184 | 1,2,3-Trichloropropane | % Recov | 127 |
| 45 | 95498 | 2-Chlorotoluene | % Recov | 106 |
| 46 | 106434 | 4-Chlorotoluene | % Recov | 106 |
| 47 | 1330207 | Total Xylenes | % Recov | 103 |
| 48 | 95636 | 1,2,4-Trimethylbenzene | % Recov | 106 |
| 49 | 98066 | Tert-Butylbenzene | % Recov | 106 |
| 50 | 108678 | 1,3,5-Trimethylbenzene | % Recov | 106 |

(continued on next page)

30-SEP-91

Washington State Department of Ecology
*** Lab Analysis Report ***

Page 9

Transaction #: 09269907 Seq #: 05 (51) VOA - PP Scan (GCMS)

Sample No.: 91 347211 (continued from previous page)

| Line | Par # | Parameter Description | Units | Value |
|------|----------|------------------------------|---------|---------------|
| 51 | 135988 | Sec-Butylbenzene | % Recov | 104 |
| 52 | 99876 | p-Isopropyltoluene | % Recov | 106 |
| 53 | 104518 | Butylbenzene | % Recov | 106 |
| 54 | 96128 | 1,2-Dibromo-3-chloropropane | % Recov | 118 |
| 55 | 87616 | 1,2,3-Trichlorobenzene | % Recov | 113 |
| 56 | 98828 | Isopropylbenzene (Cumene) | % Recov | 108 |
| 57 | 103651 | BENZENE, PROPYL- | % Recov | 106 |
| 58 | 541731 | 1,3-Dichlorobenzene | % Recov | 108 |
| 59 | 106467 | 1,4-Dichlorobenzene | % Recov | 109 |
| 60 | 95501 | 1,2-Dichlorobenzene | % Recov | 110 |
| 61 | 109 | Unknown | % Recov | 115 |
| 62 | 91203 | Naphthalene | % Recov | 119 |
| 63 | 87683 | Hexachlorobutadiene | % Recov | 110 |
| 64 | -762492 | Surrog: 1-Bromo-2-Fluoroetha | % Recov | 113 (Surr) PR |
| 65 | 2747582 | d8-Toluene | % Recov | 102 (Surr) PR |
| 66 | -460004 | p-Bromofluorobenzene | % Recov | 98 (Surr) PR |
| 67 | 17070070 | d4-1,2-Dichloroethane | % Recov | 102 (Surr) PR |
| 68 | 2199691 | D4-1,2-Dichlorobenzene | % Recov | 100 (Surr) PR |

30-SEP-91

Washington State Department of Ecology
*** Lab Analysis Report ***

Page 10

ransaction #: 09269907 Seq #: 06 (51) VOA - PP Scan (GCMS)
 roj Code : DOE-003E LAKEWOOD/PLAZA CLEANERS PE # : D3P11

Blank ID : BW1247
 ample No.: 91 347211

Alternate Keys:

amp Matrix: (10) Water-Total Units: (11) ug/l %Sld: _____
 A Code: (LBK1) Lab Blank Sample #1 Peaks Total: _____
 ate Extracted: Date Analyzed: 910904 # Days to Ext/Anal: 07 13

| Line | Par # | Parameter Description | Units | Value |
|------|----------|------------------------------|-------|-------|
| 1 | 74873 | Chloromethane | ug/l | 1U |
| 2 | 75718 | Methane, Dichlorodifluoro- | ug/l | 1U |
| 3 | 74839 | Bromomethane | ug/l | 1U |
| 4 | 75014 | Vinyl Chloride | ug/l | 1U |
| 5 | 75003 | Chloroethane | ug/l | 1U |
| 6 | 75694 | Trichlorofluoromethane | ug/l | 1U |
| 7 | 75092 | Methylene Chloride | ug/l | 0.3J |
| 8 | 67641 | Acetone | ug/l | 1UJ |
| 9 | 75150 | Carbon Disulfide | ug/l | 1U |
| 10 | 75354 | 1,1-Dichloroethene | ug/l | 1U |
| 11 | 75343 | 1,1-Dichloroethane | ug/l | 1U |
| 12 | 156605 | trans-1,2-Dichloroethene | ug/l | 1UJ |
| 13 | 156592 | Cis-1,2-Dichloroethene | ug/l | 1U |
| 14 | 590207 | 2,2-Dichloropropane | ug/l | 1U |
| 15 | 74975 | Bromochloromethane | ug/l | 1U |
| 16 | 67663 | Chloroform | ug/l | 1U |
| 17 | 107062 | 1,2-Dichloroethane | ug/l | 1U |
| 18 | 78933 | 2-Butanone | ug/l | 32 |
| 19 | 71556 | 1,1,1-Trichloroethane | ug/l | 1U |
| 20 | 56235 | Carbon Tetrachloride | ug/l | 1U |
| 21 | 563586 | 1,1-Dichloropropene | ug/l | 1U |
| 22 | 75274 | Bromodichloromethane | ug/l | 1U |
| 23 | 78875 | 1,2-Dichloropropene | ug/l | 1U |
| 24 | 74953 | Dibromomethane | ug/l | 1U |
| 25 | 10061026 | trans-1,3-Dichloropropene | ug/l | 1U |
| 26 | 79016 | Ethene, trichloro- | ug/l | 1U |
| 27 | 124481 | Dibromochloromethane | ug/l | 1U |
| 28 | 106934 | 1,2-Dibromoethane (EDB) | ug/l | 1U |
| 29 | 79005 | 1,1,2-Trichloroethane | ug/l | 1U |
| 30 | 142289 | 1,3-Dichloropropene | ug/l | 1U |
| 31 | 71432 | Benzene | ug/l | 1U |
| 32 | 10061015 | cis-1,3-Dichloropropene | ug/l | 1U |
| 33 | 75252 | Bromoform | ug/l | 1U |
| 34 | 591786 | 2-Hexanone | ug/l | 1U |
| 35 | 108101 | 4-Methyl-2-Pentanone | ug/l | 1U |
| 36 | 127184 | Tetrachloroethene | ug/l | 0.3J |
| 37 | 79345 | ETHANE, 1,1,2,2-TETRACHLORO- | ug/l | 1U |
| 38 | 630206 | Ethane, 1,1,1,2-Tetrachloro- | ug/l | 1U |
| 39 | 108883 | Toluene | ug/l | 1U |
| 40 | 108907 | Chlorobenzene | ug/l | 1U |
| 41 | 100414 | Ethylbenzene | ug/l | 1U |
| 42 | 100425 | BENZENE, ETHENYL-(STYRENE) | ug/l | 1U |
| 43 | 108861 | Bromobenzene | ug/l | 1U |
| 44 | 96184 | 1,2,3-Trichloropropene | ug/l | 1U |
| 45 | 95498 | 2-Chlorotoluene | ug/l | 1U |
| 46 | 106434 | 4-Chlorotoluene | ug/l | 1U |
| 47 | 1330207 | Total Xylenes | ug/l | 1U |
| 48 | 95636 | 1,2,4-Trimethylbenzene | ug/l | 1U |
| 49 | 98066 | Tert-Butylbenzene | ug/l | 1U |
| 50 | 108678 | 1,3,5-Trimethylbenzene | ug/l | 1U |

(continued on next page)

30-SEP-91

Washington State Department of Ecology
*** Lab Analysis Report ***

Page 11

Transaction #: 09269907 Seq #: 06 (51) VOA - PP Scan (GCMS)

Sample No.: 91 347211 (continued from previous page)

| Line | Par # | Parameter Description | Units | Value |
|------|----------|------------------------------|---------|---------------|
| 51 | 135988 | Sec-Butylbenzene | ug/l | 1U |
| 52 | 99876 | p-Isopropyltoluene | ug/l | 1U |
| 53 | 104518 | Butylbenzene | ug/l | 1U |
| 54 | 96128 | 1,2-Dibromo-3-chloropropane | ug/l | 1U |
| 55 | 87616 | 1,2,3-Trichlorobenzene | ug/l | 1U |
| 56 | 98828 | Isopropylbenzene (Cumene) | ug/l | 1U |
| 57 | 103651 | BENZENE, PROPYL- | ug/l | 1U |
| 58 | 541731 | 1,3-Dichlorobenzene | ug/l | 1U |
| 59 | 106467 | 1,4-Dichlorobenzene | ug/l | 1U |
| 60 | 95501 | 1,2-Dichlorobenzene | ug/l | 1U |
| 61 | 120821 | 1,2,4-Trichlorobenzene | ug/l | 1U |
| 62 | 91203 | Naphthalene | ug/l | 1U |
| 63 | 87683 | Hexachlorobutadiene | ug/l | 1U |
| 64 | -762492 | Surrog: 1-Bromo-2-Fluoroetha | % Recov | 108 (Surr) PR |
| 65 | 2747582 | d8-Toluene | % Recov | 95 (Surr) PR |
| 66 | -460004 | p-Bromofluorobenzene | % Recov | 92 (Surr) PR |
| 67 | 17070070 | d4-1,2-Dichloroethane | % Recov | 102 (Surr) PR |
| 68 | 2199691 | D4-1,2-Dichlorobenzene | % Recov | 106 (Surr) PR |

30-SEP-91

Washington State Department of Ecology
*** Lab Analysis Report ***

Page 12

ransaction #: 09269907 Seq #: 07 (51) VOA - PP Scan (GCMS)
 roj Code : DOE-003E LAKEWOOD/PLAZA CLEANERS PE # : D3P11

Blank ID : BW1248
 ample No.: 91 347211

Alternate Keys:

amp Matrix: (10) Water-Total Units: (11) ug/l %Sld: _____
 A Code: (LBK2) Lab Blank Sample #2 Peaks Total: _____
 ate Extracted: Date Analyzed: 910905 # Days to Ext/Anal: 07 14

| Line | Par # | Parameter Description | Units | Value |
|------|----------|------------------------------|-------|-------|
| 1 | 74873 | Chloromethane | ug/l | 1U |
| 2 | 75718 | Methane, Dichlorodifluoro- | ug/l | 1U |
| 3 | 74839 | Bromomethane | ug/l | 1U |
| 4 | 75014 | Vinyl Chloride | ug/l | 1U |
| 5 | 75003 | Chloroethane | ug/l | 1U |
| 6 | 75694 | Trichlorofluoromethane | ug/l | 1U |
| 7 | 75092 | Methylene Chloride | ug/l | 0.3J |
| 8 | 67641 | Acetone | ug/l | 2J |
| 9 | 75150 | Carbon Disulfide | ug/l | 1U |
| 10 | 75354 | 1,1-Dichloroethene | ug/l | 1U |
| 11 | 75343 | 1,1-Dichloroethane | ug/l | 1U |
| 12 | 156605 | trans-1,2-Dichloroethene | ug/l | 1UJ |
| 13 | 156592 | Cis-1,2-Dichloroethene | ug/l | 1U |
| 14 | 590207 | 2,2-Dichloropropane | ug/l | 1U |
| 15 | 74975 | Bromochloromethane | ug/l | 1U |
| 16 | 67663 | Chloroform | ug/l | 1U |
| 17 | 107062 | 1,2-Dichloroethane | ug/l | 1U |
| 18 | 78933 | 2-Butanone | ug/l | 1 |
| 19 | 71556 | 1,1,1-Trichloroethane | ug/l | 1U |
| 20 | 56235 | Carbon Tetrachloride | ug/l | 1U |
| 21 | 563586 | 1,1-Dichloropropene | ug/l | 1U |
| 22 | 75274 | Bromodichloromethane | ug/l | 1U |
| 23 | 78875 | 1,2-Dichloropropane | ug/l | 1U |
| 24 | 74953 | Dibromomethane | ug/l | 1U |
| 25 | 10061026 | trans-1,3-Dichloropropene | ug/l | 1U |
| 26 | 79016 | Ethene, trichloro- | ug/l | 1U |
| 27 | 124481 | Dibromochloromethane | ug/l | 1U |
| 28 | 106934 | 1,2-Dibromoethane (EDB) | ug/l | 1U |
| 29 | 79005 | 1,1,2-Trichloroethane | ug/l | 1U |
| 30 | 142289 | 1,3-Dichloropropane | ug/l | 1U |
| 31 | 71432 | Benzene | ug/l | 1U |
| 32 | 10061015 | cis-1,3-Dichloropropene | ug/l | 1U |
| 33 | 75252 | Bromoform | ug/l | 1U |
| 34 | 591786 | 2-Hexanone | ug/l | 1U |
| 35 | 108101 | 4-Methyl-2-Pentanone | ug/l | 1U |
| 36 | 127184 | Tetrachloroethene | ug/l | 1U |
| 37 | 79345 | ETHANE, 1,1,2,2-TETRACHLORO- | ug/l | 1U |
| 38 | 630206 | Ethane, 1,1,1,2-Tetrachloro- | ug/l | 1U |
| 39 | 108883 | Toluene | ug/l | 1U |
| 40 | 108907 | Chlorobenzene | ug/l | 1U |
| 41 | 100414 | Ethylbenzene | ug/l | 1U |
| 42 | 100425 | BENZENE, ETHENYL-(STYRENE) | ug/l | 1U |
| 43 | 108861 | Bromobenzene | ug/l | 1U |
| 44 | 96184 | 1,2,3-Trichloropropane | ug/l | 1U |
| 45 | 95498 | 2-Chlorotoluene | ug/l | 1U |
| 46 | 106434 | 4-Chlorotoluene | ug/l | 1U |
| 47 | 1330207 | Total Xylenes | ug/l | 1U |
| 48 | 95636 | 1,2,4-Trimethylbenzene | ug/l | 1U |
| 49 | 98066 | Tert-Butylbenzene | ug/l | 1U |
| 50 | 108678 | 1,3,5-Trimethylbenzene | ug/l | 1U |

30-SEP-91

Washington State Department of Ecology
*** Lab Analysis Report ***

Page 13

ransaction #: 09269907 Seq #: 07 (51) VOA - PP Scan (GCMS)

ample No.: 91 347211 (continued from previous page)

| Line | Par # | Parameter Description | Units | Value |
|------|----------|------------------------------|---------|---------------|
| 51 | 135988 | Sec-Butylbenzene | ug/l | 1U |
| 52 | 99876 | p-Isopropyltoluene | ug/l | 1U |
| 53 | 104518 | Butylbenzene | ug/l | 1U |
| 54 | 96128 | 1,2-Dibromo-3-chloropropane | ug/l | 1U |
| 55 | 87616 | 1,2,3-Trichlorobenzene | ug/l | 1U |
| 56 | 98828 | Isopropylbenzene (Cumene) | ug/l | 1U |
| 57 | 103651 | BENZENE, PROPYL- | ug/l | 1U |
| 58 | 541731 | 1,3-Dichlorobenzene | ug/l | 1U |
| 59 | 106467 | 1,4-Dichlorobenzene | ug/l | 1U |
| 60 | 95501 | 1,2-Dichlorobenzene | ug/l | 1U |
| 61 | 120821 | 1,2,4-Trichlorobenzene | ug/l | 1U |
| 62 | 91203 | Naphthalene | ug/l | 1U |
| 63 | 87683 | Hexachlorobutadiene | ug/l | 1U |
| 64 | -762492 | Surrog: 1-Bromo-2-Fluoroetha | % Recov | 105 (Surr) PR |
| 65 | 2747582 | d8-Toluene | % Recov | 95 (Surr) PR |
| 66 | -460004 | p-Bromofluorobenzene | % Recov | 86 (Surr) PR |
| 67 | 17070070 | d4-1,2-Dichloroethane | % Recov | 97 (Surr) PR |
| 68 | 2199691 | D4-1,2-Dichlorobenzene | % Recov | 103 (Surr) PR |

30-SEP-91

Washington State Department of Ecology
*** Lab Analysis Report ***

Page 1

=> Transaction #: 09269906 Laboratory: (WE) Ecology, Manchester Lab

Work Group: (52) Tent Ident - VOA Scan (GCMS)

Instrument: (GCMS-E1) EPA1 GC/MS INCOS-5100 Capillary Colu

Method: (EP2-624) GC/MS Purge and Trap Scan

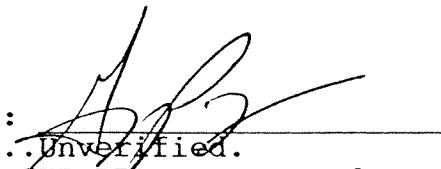
Chemist: (LAB) Lab (General R/O) Hours Worked: _____

Project: DOE-003E LAKEWOOD/PLAZA CLEANERS Prg Ele#: D3P11

Prj Off: Marti, Pam DOE Analysis Due: 910823 Revised Due:

*** Sample Records in Transaction ***

| Seq# | Sample # | QA | Date/Time | Description | Alternate Keys |
|------|----------|------|-----------|-------------|----------------|
| 01 | 91347210 | LBK1 | 910822 | MW-20A | |

Record Type: TRNIN3 Date Verified: 9/30/91 By: 
Transaction Status: Edited Transaction...First Printing...Unverified.
Processed: 30-SEP-91 10:28:17 Status: E Batch: (In CUR DE) *Gregory Perez*

30-SEP-91

Washington State Department of Ecology
*** Lab Analysis Report ***

Page 2

Transaction #: 09269906 Seq #: 01 (52) Tent Ident - VOA Scan (GCMS)
Proj Code : DOE-003E LAKEWOOD/PLAZA CLEANERS PE # : D3P11

Blank ID : BW1247

Sample No.: 91 347210

Alternate Keys:

Samp Matrix: (10) Water-Total Units: (11) ug/l %Slds:
QA Code: (LBK1) Lab Blank Sample #1 Peaks Total:
Date Extracted: Date Analyzed: 910926 # Days to Ext/Anal: 0 / 35

| Line | Par # | Parameter Description | Units | Value |
|------|--------|-----------------------|-------|-------|
| 1 | 109999 | Tetrahydrofuran | ug/l | 2.5J |

Data Qualifiers

| <u>Code</u> | <u>Definition</u> |
|-------------|--|
| B | Analyte was also found in the analytical method blank indicating the sample may have been contaminated. |
| EXP | The result is equal to the number before EXP times 10 to the power of the number after EXP. As an example 3EXP6 equals 3×10^6 . |
| E | Reported result is an estimate because of the presence of interference. |
| J | The analyte was positively identified. The associated numerical result is an estimate. |
| N | For organic analytes there is evidence the analyte is present in this sample. For metals analytes the spike sample recovery is not within control limits. |
| NJ | There is evidence that the analyte is present. The associated numerical result is an estimate. |
| NAF | Not analyzed for. |
| P | The analyte was detected above the instrument detection limit but below the established minimum quantitation limit. |
| REJ | The data are unusable for all purposes. |
| U | The analyte was not detected at or above the reported result. |
| UJ | The analyte was not detected at or above the reported estimated result. |
| ** | The analyte was present in the sample. Used as a visual aid to locate detected compounds on the report sheet. |

APPENDIX B

Historical TCE and PERC Data

Table B-1
TCE Concentrations Measured in Monitoring Wells
Providence Cancer Watchdog

Table B-1
TCE Concentrations Measured in Monitoring Wells
Pender Corner, Washington

| Well No. | 2/1/85 | | 3/1/85 | | 5/16/85 | | 6/17/85 | | 8/20/85 | | 1/1/86 | | 8/25/86 | | 1/21/86 | | 3/17/87 | | 10/5/87 | | 1/2/88 | | 4/7/88 | | 4/26/88 | | 10/4/88 | | Through 11/29/88 | | 5/7/89 | | Through 5/25/89 | | 4/7/90 | | Through 4/24/90 | |
|------------------|-----------------|----------------|-----------------|-----------------|----------------|----------------|------------------------------|------------------------------|-----------------|-----------------|------------------|-----------------|----------------|-----------------|----------------|-----------------|-----------------|-----------------|----------------|----------------|-----------------|-----------------|------------------|----------------|-----------------|----------------|-----------------|----|------------------|----|--------|--|-----------------|--|--------|--|-----------------|--|
| | Through 2/14/85 | Through 3/2/85 | Through 4/25/85 | Through 5/20/85 | Through 6/7/85 | Through 8/2/85 | Through 11/7/85 ^a | Through 8/23/85 ^b | Through 11/7/85 | Through 8/28/87 | Through 12/1/786 | Through 3/20/87 | Through 7/7/87 | Through 10/6/87 | Through 7/7/87 | Through 10/6/87 | Through 3/17/87 | Through 10/5/87 | Through 1/2/88 | Through 4/7/88 | Through 4/26/88 | Through 10/4/88 | Through 11/29/88 | Through 5/7/89 | Through 5/25/89 | Through 4/7/90 | Through 4/24/90 | | | | | | | | | | | |
| 33 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | | | | | | | |
| 34 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | | | | | | | |
| 35 | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | ND | | | | | | | |
| 36 | 42 | NM | NM | NM | NM | NM | NM | NM | NM | NM | NM | NM | NM | NM | NM | NM | NM | NM | NM | NM | NM | NM | NM | NM | NM | NM | NM | NM | NM | NM | NM | | | | | | | |
| 37 ^c | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 38 ^c | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 39A ^c | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 39B ^c | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 39C | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 40 ^c | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| 41 ^c | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |

^aExceeded acceptable holding time.

^bDuplicate analysis.

^cDetection limit = 100 µg/l.

dEstimated value. Compound present but at less than the specified detection limit.

eWells constructed 2/87 through 3/87.

Notes: Units in parts per billion.

NM = Not measured.

ND = Not detected.

D = Detected, not quantified.

J = Estimated value. Value not accurate.

Table B-2
PFBC Concentrations Measured in Monitoring Wells
Pender Corner, Washington

Table B-2
PERC Concentrations Measured in Monitoring Wells
Ponders Corner, Washington

| Well No. | 2/12/85 | 3/1/85 | 5/1/85 | 6/1/85 | 6/17/85 | 8/20/85 | 11/5/85 | 1/2/86 | 8/25/86 | 8/23/86* | 8/23/86 | 9/17/87 | 10/5/87 | 1/28/88 | 4/25/88 | 4/26/88 | 10/7/88 | 5/7/89 | 5/7/89 | 4/23/90 | 4/24/90 | |
|----------|--------------------|--------------------|--------------------|--------------------|-------------------|-------------------|---------------------|---------------------|---------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|--------------------|---------------------|--------------------|--------------------|--------------------|---------|--|
| | Through 2/14/85 | Through 3/12/85 | Through 4/25/85 | Through 5/20/85 | Through 6/7/85 | Through 6/7/85 | Through 8/23/85* | Through 11/7/85* | Through 12/17/87 | Through 3/20/87 | Through 3/20/87 | Through 3/20/87 | Through 10/6/87 | Through 1/29/88 | Through 4/26/88 | Through 4/26/88 | Through 11/20/88 | Through 5/15/89 | Through 5/15/89 | Through 5/15/89 | | |
| 33 | ND | ND | NM | ND | ND | ND | ND | ND | ND | ND | NM | NM | NM | NM | NM | |
| 34 | 83 | NM | NM | NM | NM | 1.2 | NM | NM | NM | ND | NM | NM | NM | NM | NM | |
| 35 | ND | ND | NM | ND | ND | ND | ND | ND | ND | ND | NM | NM | NM | NM | NM | |
| 36 | 139 | NM | NM | NM | NM | NM | NM | NM | NM | NM | NM | NM | ND | ND | J | ND | ND | ND | ND | ND | D | |
| 37d | | | | | | | | | | | | | ND | ND | NM | NM | NM | NM | NM | NM | NM | |
| 38d | | | | | | | | | | | | | ND | ND | J | D | ND | ND | ND | ND | ND | |
| 39A d | | | | | | | | | | | | | ND | ND | NM | NM | J | ND | ND | ND | ND | |
| 39B d | | | | | | | | | | | | | ND | ND | NM | NM | ND | NM | NM | NM | ND | |
| 39C | | | | | | | | | | | | | ND | ND | J | ND | ND | ND | ND | ND | ND | |
| 40d | | | | | | | | | | | | | ND | ND | NM | NM | NM | NM | NM | ND | ND | |
| 41d | | | | | | | | | | | | | ND | ND | NM | NM | NM | NM | ND | ND | ND | |

*Exceeded acceptable holding time.

**Duplicate analysis.

†Estimated value. Compound present but at less than the specified detection limit.
dWells constructed 2/87 through 3/87.

Note: Units in $\mu\text{g/l}$.

NM = Not measured.

ND = Not detected.

D = Detected, not quantified.

J = Estimated value. Value not accurate.

8870060.51

8/29/90
 8870060.51/2